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rosin is found in masses as large as a nut, sometimes in veins. It is from a tertiary formation.

Mr. Lea has a specimen of rosin which Sir Henry De La Beche had sent him, it was found with coal in Borneo, and is as large as a hickory nut.

March 30.

Vice-President Bridges in the Chair.

Fifty-eight members present.

The committees on Dr. Wilcocks' paper, on Messrs. Meek and Hayden's paper, read March 2nd; on Mr. Stimpson's paper, on Dr. Leidy's paper read March 9th, on Dr. LeConte's paper, on Mr. Uhler's paper read March 16th; on two papers by Mr. Lea, read March 23d; severally reported in favor of their publication in the Proceedings, and the reports were adopted.

The amendments to the By-laws proposed January 26, and successively passed to second and third reading, were unanimously adopted as follows:

CHAPTER XIII.

ON THE CREATION AND GOVERNMENT OF DEPARTMENTS.

Art. I. To facilitate and encourage the special investigation of certain branches of natural science, the members of the Academy may form Departments, and hold meetings in the Hall, distinct and separate from the general meetings of the Academy. The Departments shall be A, B, C, D, E, &c., and may be constituted and designated in the manner herein provided. The Department earliest established, shall have precedence of every one subsequently formed.

Art. II. Any twelve or greater number of members of this Academy, may be constituted a division or department, which shall be called the Department of the Academy of Natural Sciences of Philadelphia, as provided in the third article of this chapter.

Art. III. Whenever members associate to form a department or branch, written application shall be made to the Academy, at a meeting for business, in the following words: The undersigned members request that they may be constituted the Department of the Academy of Natural Sciences of Philadelphia. [Note.—The blank is to be filled with the name of the branch of natural sciences to which the petitioners propose to devote themselves.]

Upon such application being made, the Academy may establish the Department by the enactment of a clause additional to Article XXI. of this chapter, designating the name of the Department. If the Department be thus created the names of the petitioners shall be entered on the record of Proceedings as its founders.

ART. IV. The officers of each Department shall be a Director, a Vice Director, a Recorder, a Treasurer, and a Conservator, who shall be elected at the first meeting of the department, and subsequently at the first meeting in December of every year.

ART. V. None others than members of the Academy shall be members of any one of its Departments.

ART. VI. Each Department, formed as herein provided, shall elect its own officers and members.

ART. VII. Every candidate for admission into a Department shall be proposed, in writing, by two of its members at one meeting, and be balloted for at the meeting next succeeding. The affirmative vote of three-fourths shall be necessary to elect a candidate, but no election of members or of officers of a Department shall be valid, unless there be present at the meeting at least six legal voters.

ART. VIII. Every member elect shall pay to the Treasurer of the Department an initiation fee and a semi-annual contribution, the amount of which shall be determined by the members of the Department, provided that a Department shall not assess its members at a rate exceeding two dollars initiation and two dollars semi-annual contribution. In other respects, the By-Laws, (Chapter II.) which govern the "election of members and correspondents" of the Academy, shall apply also to the election of members of any of its Departments.

ART. IX. Members of a Department may resign or be expelled from it, in conformity to the By-Laws of the Academy, (Chapter IV.)

ART. X. The By-Laws (Chapter V.) which apply to the officers of the Academy, shall apply also to analogous officers of each Department, except the Treasurer of a Department, who shall collect and have charge of its funds, but shall disburse no money or monies except by the affirmative votes of the Department, vouched for by the signature of its Director and Recorder;

and shall submit a detailed statement of his accounts to the Department at the first meeting in December of each year.

Art. XI. Each Department shall defray the expenses which are peculiar to it. The Academy will not be responsible for debts contracted by any Department, or by any officer or member thereof.

Art. XII. Members and correspondents of the Academy are entitled to attend the meetings of any of its Departments, but shall have such privileges only in a Department as those granted by the Academy to its correspondents. (Chapter I. Art. iii.)

Art. XIII. Each Department may appoint such special and standing committees as may be considered necessary for its scientific objects.

Art. XIV. The Committees of each Department shall be governed by the same rules (Chapter VI.) which govern the Committees of the Academy, as far as they are applicable.

Art. XV. The collections and books of each Department are the common property of the Academy; nevertheless, whenever it may be deemed advantageous to the interests of the Institution, the Curators of the Academy may permit the collections of a Department to be arranged in accordance with the written request of its Conservator. Donations addressed to or for any Department, shall be received as donations to the Academy for the use of that Department.

Art. XVI. Each Department, at the first meeting after the election of its officers, shall determine, subject to the approval of the Academy, the evenings of its stated meetings, provided that no Department shall select a time of meeting previously occupied by the Academy, or any of its established Departments.

Art. XVII. The order of business at the meetings of each Department shall be in accordance with the provisions of these By-Laws, as far as applicable. (Chapter XI., Art. vii.)

Art. XVIII. Each Department shall submit to the Academy, at every meeting for business, the record of its procedings for the month, or in lieu of it, at the option of the Academy, a written summary thereof.

ART. XIX. Papers from any Department designed for publication in the Proceedings or in the Journal of the Academy, shall take the course provided in these By-Laws (Chapter X.), except that each Department may refer papers read before it to a special committee, which shall report to the Academy at the meeting for business next succeeding its appointment, which report shall be treated as if it emanated from a special committee of the Academy.

The papers of each Department shall be paged and entitled in such manner as to permit the Proceedings, as well as the Journal, of each Department, to be bound in separate volumes and appropriately labelled.

ART. XX. On all points not provided for in this Chapter, each Department shall be governed by the Charter, By-Laws and usages of the Academy.

ART. XXI. The Department A. shall be denominated the Biological Department of the Academy of Natural Sciences of Philadelphia.

Chapter XI. Art. viii. shall be amended so as to insert

2. Proceedings and Reports from Departments in their order of precedence,

next after the. line

"1. Minutes of the last meeting for business shall be read.

And also so as to change the numbers 2, 3, 4, 5, 6, 7, 8, 9 to read 3, 4, 5, 6, 7, 8, 9, 10.

Dr. Hammond offered the following:

Resolved, That those members of the Academy who have signed the memorial offered January 26th, since the record, be added to those already recorded as founders of the Biological Department; which was adopted.

Dr. LeConte moved that a committee be appointed for the purpose of drafting a series of By-laws for the government of the Committee on Proceedings, which was appointed—to consist of Drs. LeConte, Ruschenberger and Wilson.

Mr. Vaux offered the following:

Resolved, That the Library Committee be authorized to dispose of the French Historical Documents, at such price as they deem proper, if opportunity offer; which was adopted.

Remarks on an Optical Illusion.

BY ALEXANDER WILCOCKS, M. D.

I desire to draw the attention of the Academy to one of the phenomena of sight, which is interesting, because I conceive that it has led some zealous investigators of the mysteries of nature into error.

I allude to that power of the retina, by which an impression made upon it by a luminous object is retained, during an appreciable time.

The most familiar illustration of this law, is in the whirling of a piece of lighted charcoal in the dark. The result is the formation of a luminous ring, more or less perfect, according to the rapidity of the motion of the hand.

Experience has not only abundantly proved the existence of this peculiarity of the retina; but it has also determined the duration of the impressions. It has been found to be from one tenth, to one eighth of a second.

Such at least is true of persons in good health: but there is reason to believe that there are cases where the duration of impressions is much longer.

If when under suitable circumstances, a luminous body is moved before the eye at rest, we perceive a line of light, we may naturally expect, that when the converse condition obtains, we shall witness a similar phenomenon.

By the converse condition, I mean that wherein the luminous object is at rest, and the eye in motion about one of its own axes.

Requirements so simple are easily obtained; the most convenient object upon which to make the experiment is the star Sirius. The precautions to be observed, are to choose a time when the moon does not shine, and the star is high above the horizon; and a place where the eye will not be dazzled by any artificial light. The observer must be free from all sense of fatigue, because the eye sympathizes readily with the condition of the body, and any cause that interferes with the rapidity of the motions of the organ, would endanger the success of the experiment.

Experiment 1st. Let the observer turn his face toward the star, but fix his eyes upon a point about ten degrees to the east of that object, then suddenly placing his eyes upon the star, he will perceive a ray or flash of light reaching from the star to a point ten degrees to the west.

Experiment 2nd. Keeping his eyes for a moment upon the star, let the observer return them to their first position, and he will perceive that the flash of light will extend from the star to that position.

Any one who will trace in his mind the course pursued by the image of the star upon the retinæ, during this motion of the eyes, will ascertain that these results are precisely what *à priori* reasoning should lead us to expect.

In the experiments just described, the flashes of light are straight. If instead of the star Sirius, we choose for our experiment, the planet Jupiter, at a time when that body is within twenty-five degrees of the zenith, we shall discover that the flashes of light are curved, and the convexity of the curve invariably toward the earth.

It must be noticed in connection with this peculiarity, that any observations upon an object at such an altitude as the one proposed, viz. sixty-five degrees, would require that the eyes should be much raised above their usual plane of motion. The physiologist may find much difficulty in explaining why the elevation of the eyes in their orbits should cause the flash of light to be curved; and why the convexity should be toward the earth; but, that the facts exist, others may verify for themselves.

The particular interest which attaches to this experiment is from the light which it throws upon the results of some observations upon meteors, the explanation of which has baffled the ingenuity of astronomers.

In the year 1798, Brandes, of Leipsig and Benzenberg, of Dusseldorf, undertook to measure the height and velocities of meteors. Having established a base line of 46,200 feet, and provided themselves with chronometers, they stationed themselves at the ends of the line, and watched for meteors, carefully noting the times of their appearance, and their courses. By these means, the observers were enabled to identify twenty-two of these objects; and the data thus derived, yielded satisfactory results as to height and velocity.

The most remarkable feature of their observations, was, that one of the meteors instead of falling, *moved in a direction away from the earth.*

A curve in the train of a meteor with the convexity downward, would indicate a motion from the earth.

Nearly all the phenomena of meteors have been accounted for by theories which men of science regard, if not as satisfactory, at least as plausible; but I believe no astronomer has yet had the hardihood to attempt to explain, how a meteor can approach near enough to our planet to be inflamed by its atmosphere, and become visible to its inhabitants, and then move off in defiance of the law of gravitation.

I have detailed experiments which show that stationary objects in the heavens, under certain circumstances, appear associated with flashes of light which are curved with their convexity towards the earth; and I trust that what I have said will convince the Academy that there is the greatest probability that the anomalous appearance described by Messrs. Brandes and Benzenberg, was only an example of the optical illusion which it is the purpose of this paper to explain.

Notice of Remains of Extinct Vertebrata, from the Valley of the Niobrara River, collected during the Exploring Expedition of 1857, in Nebraska, under the command of Lieut. G. K. Warren, U. S. Top. Eng., by Dr. F. V. Hayden, Geologist to the Expedition.*

BY JOSEPH LEIDY, M. D.

During the Exploring Expedition of the last year in Nebraska, under the command of Lieut. G. K. Warren, the Geologist of the Expedition, Dr. F. V. Hayden collected a number of remains of mammals and turtles, from a deposit, in the valley of the Niobrara River (Swift-running-water; L'eau-qui-court), which he suspects to be of pliocene age. The collection is an exceedingly interesting and important one; and the anatomical characters of the specimens support the opinion of their discoverer, that the formation, from which they were obtained, belongs to the later tertiary period.

The extinct fauna of the Niobrara is especially rich in remains of ruminating and equine animals. Among the former are several peculiar genera, of which two are closely allied to *Oreodon* and *Leptauchenia*, of the miocene deposit of the Mauvaises Terres: one is allied to the Musk-deer, and another closely approaches the Camel. Besides the remains of a true species of *Equus*, the collection contains those of two species of *Hipparion*, and several peculiar genera of the equine family. There are also remains of several species of canine and feline animals, of a small species of Beaver, and of a species of Porcupine more nearly allied to that of the old world than to our own recent one. The collection further contains remains of a Rhinoceros, resembling that of India, those of a new species of Mastodon, and those of a large Elephant.

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*Washington, (D. C.) March 8, 1858.

Capt. A. A. Humphreys, T. E., Ch'ge Off. Expl. and Surveys.

Sir: Professor Joseph Leidy has prepared a "Notice of Remains of Extinct Vertebrates," constituting twenty-eight new species, collected by Dr. Hayden along the Niobrara River, on the Expedition placed under my command by the War Department, during the past summer, which, it is desirable, should be published at once in the Proceedings of the Academy of Natural Sciences of Philadelphia. The permission of the Honorable Secretary of War, to make the publication, is requested.

Very respectfully, sir, your obedient servant,
G. K. Warren,
Lieut. Top. Eng'rs.

Submitted to the Secretary of War. The publication is approved by him.
A. A. Humphreys,
Capt. Top. Eng'rs. in Charge.

One of the most remarkable circumstances, in relation with this extinct fauna, is that it is more nearly allied to the present recent one of the old world than to that of our own continent. From a comparison of our recent fauna and flora with that of the eastern continent, the deduction has been made, that the western continent is the older of the two, geologically speaking, whereas, the Niobrara fauna would indicate just the reverse relationship of age. A number of similar instances show that totally different faunæ and floræ may be cotemporaneous, and do not necessarily indicate different periods of existence.

CARNIVORA.

Canis saevus, Leidy.

Several much mutilated fragments of two lower jaws indicate a species of Wolf, about the size of the *Canis occidentalis*.

Height of fragments of lower jaws below the sectorial tooth,	14 lines and 15½ lines.
Antero-posterior diameter of the lower sectorial tooth,	13 lines and 13½ lines.

The present extinct species is not so large as the one whose remains have been discovered in association with those of the *Megalonyx*, *Tapirus*, *Equus*, &c., on the banks of the Ohio River, Indiana, to which the name of *Canis primœvus* was inadvertently applied (Proc. Acad. Nat. Sci. vii. 200; Journal A. N. S. iii. 167), and which may now be distinguished by that of Canis dirus.

Canis temerarius, Leidy.

A second species of Wolf is inferred to have existed, from two small fragments of an upper and a lower jaw, containing the sectorial teeth, and the first upper tubercular tooth, about the size of the corresponding parts of the Red Fox, *Canis fulvus*.

Height of fragment of lower jaw below the sectorial tooth,	8 lines.
Antero-posterior diameter of lower sectorial tooth,	7½ "
Antero-posterior diameter of upper sectorial tooth	7 "
Transverse diameter of first upper tubercular tooth,	6½ "

Canis vafer, Leidy.

A third species of *Canis*, of small size, is indicated by the greater portions of both sides of a lower jaw, containing nearly all the teeth, which do not differ in form from those of the Red Fox.

Depth of lower jaw at the sectorial tooth,	6 lines.
Length of entire molar series,	21½ "
Antero-posterior diameter of sectorial tooth,	5½ "
Length of crown of canine tooth,	5¼ "

Canis (Epicyon) Haydeni, Leidy.

Since the preceding descriptions of wolves were written, Dr. Hayden has sent to me for examination a specimen belonging to the Niobrara collection, consisting of a much mutilated fragment of a lower jaw of a huge wolf.

The fragment contains the sectorial molar, the two preceding premolars, and the sockets for the tubercular molars. The teeth preserved in the specimen are much worn, indicating an old individual, but they have the form of the corresponding teeth in the recent Wolf. The tubercular molars have occupied more than an inch of space, though more crowded in position than in recent wolves. The last, as well as the first, was inserted by widely separated fangs and was implanted almost directly backward in the ascending border of the ramus, above the level of the heel of the sectorial molar.

The portion of jaw is remarkable for its robustness; the thickness of the anterior border of the ramus an inch above the ordinary line of the teeth being eight lines.

The species is respectfully dedicated to Dr. F. V. Hayden, the untiring geological explorer of the region of the Upper Missouri.

Depth of jaw at sectorial molar,	21 lines.
Thickness of jaw below sectorial molar,	9 "
Extent of space occupied by the sectorial and preceding two premolars,	34 "
Antero-posterior diameter of sectorial molar,	17 "
Transverse diameter of sectorial molar,	7½ "
Space occupied by the tubercular molars,	14 "

Felis (Pseudælurus) intrepidus, Leidy.

An extinct species of the cat tribe is indicated by a well preserved specimen of the lower jaw of an animal intermediate in size to the Panther (*Felix concolor*) and the Lynx (*Felix canadensis*). The jaw together with the teeth present a repetition of form of the corresponding parts in known species of cats, except that in the middle of the hiatus behind the canine tooth there is a smaller socket for a rudimental premolar, as in the extinct *Felis* (*Pseudœlurus*) *quadridentatus* of Europe, and the sectorial molar has a basal heel and tubercle about half as well developed as in the preceding teeth.

Length of the lower jaw from the condyle	58 lines.
Height of the lower jaw at coronoid process	27 "
Height of the lower jaw below middle molar	11 "
Length of molar series (3)	21 "
Antero-posterior diameter of sectorial molar	7 "
Height at posterior cusp of sectorial molar	5½ "

Aelurodon ferox, Leidy.

The only specimen upon which this name is proposed, consists of an isolated, unworn, upper sectorial molar tooth, which has about the size and proportionate form of that of the common Wolf of this country or Europe, but has a tubercle or lobe in advance of the principal cusp nearly as well developed as that occupying the same position in the cats.

Breadth of crown antero-posteriorly and externally	13 lines.
Length of crown at principal cusp	8½ "
Thickness of crown at base anteriorly	7 "
Thickness at base of principal cusp	5½ "

RODENTIA.

Hystrix (Hystricops) venustus, Leidy.

Two isolated molar teeth, probably both referable to the same animal, have about the same size and nearly the same constitution as those of the Crested Porcupine (*Hystrix cristata*,) of Europe. One of the teeth appears to correspond with the first upper molar of the right side of the latter animal. It has a single deep fold on the inner side, and a less extensive one on the outer side. The crown, about one-fourth worn, presents on the triturating surface the fold extending from the inner and outer side, and in advance a bow-like enamel islet, and behind a transverse boot-like islet and a small circular one. The second specimen, viewed as an upper left tooth, has a deep fold on the inner side, in advance of which on the triturating surface is an oblique enamel islet, and behind, two similar ones.

Antero-posterior diameter of the first molar	5½ lines.
Transverse diameter of the first molar	4 "
Antero-posterior diameter of the second molar	3 "
Transverse diameter of the second molar	3½ "

Castor (Eucastor) tortus, Leidy.

The greater part of an upper jaw, consisting of the upper maxillæ and intermaxillæ containing the greater portion of the incisors, together with the anterior three molars of both sides, indicates an old individual of a small Beaver. The jaw and incisor teeth have the same form as the corresponding part of the recent Beaver. The first molars present nearly the same arrangement as in the latter. The succeeding two molars are nearly worn to the base of their crowns; and they have the enamel folds on the triturating surface directed much more obliquely from the outer side inward and backward than they would ever appear to do in the same condition in the recent Beaver. The size of the species was about half that of the latter animal.

Length of space occupied by the series of four molars	6	lines.
Length of space from first molar to the inter-incisive crest	14	"
Breadth of face outside of second molars	7	"
Diameter of incisors	2	"
Diameter of first molar	2½	"

RUMINANTIA.

Cervus Warreni, Leidy.

This species of deer is indicated by a fragment of a lower jaw containing the posterior four molar teeth, portions of two last inferior molars, a small antler, and a small fragment of a second. The form of the teeth is the same as in *Cervus virginianus*, and their size accords with that in full grown and robust individuals of this species. The antler is perhaps that of a young animal. The frontal process supporting it is half an inch in length and thickness. A little less than an inch above the ring of the antler it divides into two diverging prongs, of which one is broken off, and the remaining one is two and a quarter inches long.

Length of series of the posterior four lower molars	30	lines.

The species is respectfully dedicated to Lieut. G. K. Warren, U. S. A., commander of the expedition, during which the remains were collected forming the subjects of the present communication.

Merycodus necatus, Leidy.

Proc. Acad. Nat. Sci. vii. 90; ibid. viii. 89.

This genus and species were originally proposed on a small fragment of a lower jaw of a ruminating animal, belonging to the collection of Prof. Hall, of Albany, and discovered by Messrs. Meek and Hayden on Bijou Hill, Nebraska, in the summer of 1853.

The collection from the Niobrara contains the greater portion of four halves of lower jaws, together exhibiting a full series of molar teeth.

The form of the jaw supporting the teeth is much like that of the Deer, except that its base turns up posteriorly as in the Musks.

The inferior true molars have much more nearly the form of those of the Sheep than of those of the Deer or Musk. The posterior two premolars have crowns very much like that of the second premolar of the Deer, and the first is like the corresponding one in the same animal.

Depth of lower jaw at first premolar	6	lines.
Depth of lower jaw at last true molar	8½	"
Length of series of six molars	26	"
Length of series of true molars	17	"

Procamelus occidentalis, Leidy.

This genus and species are founded on several fragments of jaws, with teeth of several individuals of an animal allied to the Camel, and about two thirds its size.

The posterior fragment of a lower jaw presents the same general form as in the corresponding part of the Camel, but is broader at the ramus in relation with its height than in the latter. The posterior coronoid process is well developed; and the upper part of the ramus is more strongly depressed externally than in the Lama (*Auchenia*). The body of the lower jaw is relatively deeper than in the Camel, though not so robust; and the two sides are cöossified by a comparatively short symphysis.

Six molar teeth form a closed row in the lower jaw, being two additional to the number in the Camel and Lama. The true molars and the last premolar have nearly the same form as the corresponding teeth of the Camel. The second premolar is a reduced one from that behind it; and the first premolar has a laterally compressed ovate crown implanted by two fangs.

In a small fragment of a lower jaw, in the middle of the hiatus, in advance of the closed row of molars, there is the fang of a tooth, which appears to have been a caniniform premolar. The mental foramen is just in advance and below the position of this tooth. A foramen likewise exists below the third premolar of the closed row of teeth, corresponding to that more posteriorly situated in the Camel and Lama.

Two mutilated but connecting fragments of an upper jaw present the hard palate more deeply arched than in the Camel or Lama; and the face narrows in advance of the molar teeth as in the latter. A palatine foramen exists opposite the interval of the second and third premolars. The infra-orbital foramen occupies the same relative position as in the Camel.

As in the lower jaw, six molar teeth form a closed row in the upper jaw. The true molars, though much mutilated in the specimens under examination, appear to possess the same form as those of the Camel. The last premolar is also like the corresponding tooth of the latter. The second premolar is like the first one of the Camel, with the exception that it has the antero-internal fold of its crown as well developed as the posterior fold, which it joins at the base. The first premolar is like the first one of the series in the Lama, having a trilobate, flattened, oval crown.

Height of the ramus of the lower jaw, from its base to its condyle,	4 inches	10 lines.
Depth of lower jaw below last molar,	2 "	
Distance from last molar to the end of the posterior coronoid process,	4 "	
Depth of lower jaw at middle of the hiatus of the teeth,		10 "
Breadth of face in advance of upper molars,	1 "	6 "
Breadth of face at back molars,	4 "	
Length of upper molar series,	4 "	8 "
Length of lower molar series	4 "	10 "
Length of upper true molar series,	3 "	
Length of lower true molar series	3 "	5 "

MEGALOMERYX NIOBRARENSIS, Leidy.

This genus and species are proposed on two lower molar teeth, in the Niobrara collection, which indicate a ruminating animal of the largest size. One of the specimens is apparently a first true molar, and is inserted into a fragment of the jaw by a pair of strong fangs. The crown is two-thirds worn away, and presents the same form as the corresponding tooth of the Sheep in the same condition. The antero-postero diameter of the crown is 21 lines; the transverse diameter 11½ lines.

The second specimen is an isolated, nearly unworn, first or second true molar, with the form nearly the same as in the corresponding teeth of the Sheep. Its length is three and one-third inches; its antero-posterior diameter, at the triturating surface, is two inches, and just above the developing fangs an inch and a half; the transverse diameter, in the former position, is seven lines, and in the latter nine and a half lines.

MERYCOCHOERUS PROPRIUS, Leidy.

The genus and species are based on several halves of upper and lower jaws of a large animal, discovered by Dr. Hayden in the red grit bed of Niobrara, near Fort Laramie, Nebraska. The formula of dentition and relative position of the teeth with one another are the same as in *Oreodon*. The true molars present a repetition of the form and structure of those of the latter genus, and the premolars nearly so. The upper anterior two premolars have a greater breadth in relation with their length and thickness than in *Oreodon;* and the anterior two lower ones are more crowded in position.

The side of the face turns rather abruptly outward and backward from above the position of the true molars, more even than in the Hog, whereas, in the three described species of *Oreodon*, it slopes gradually backward aud outward, more as the Wolf. The infra-orbital foramen is above the interval of the first and second true molars, while in *Oreodon* it is above the third premolar. The malar bone below the orbit is, relatively to the size of the animal, deeper than in the Hog, but in *Oreodon* it is not more so than in the Wolf.

Length of upper series of molars,	74 lines.
Length of lower series of molars	69 "
Length of upper series of true molars,	43 "
Length of lower series of true molars.	45 "

MERYCHYUS, Leidy.

The formula of dentition, and the relative position, structure, and form of the teeth are nearly the same as in LEPTAUCHENIA. In this genus, of which the remains of two species, *L. decora* and *L. major*, were discovered by Dr. Hayden in the upper miocene beds of White River, near Eagle Nest Butte, Nebraska, the formula of dentition and relative position of the teeth with one another are the same as in OREODON. The crowns of the molars are relatively much longer, and at their outer part are more vertical than in the latter, differing in these respects very much as the molars of the Ox and the Deer. The outer lobes of the upper true molars are separated quite to the fangs by narrow, deep, vertical folds inclining forward. The inner lobes of the lower true molars are separated by narrow, overlapping folds, and present internal plane surfaces, while those of *Oreodon* are folded as in the Deer. The premolars are more crowded than in *Oreodon;* and in the case of the upper ones, the most elevated point of the triturating surface is much more anterior than in the latter. The enamel pits of the triturating surfaces of the true molars are very narrow in comparison with those of *Oreodon*, and in the lower teeth are quickly obliterated. The canines are relatively small in comparison with those of the latter genus.

In *Merychyus*, of which there appear to be three species, as indicated by the remains discovered by Dr. Hayden in the pliocene deposit of Niobrara, the folds separating the outer lobes of the upper true molars have the same form as in *Leptauchenia*, but are not so deep, do not incline forward, and do not divide the crown through its base. The lower true molars have their inner surfaces as plane as in the Camel, and have their lobes but feebly separated in comparison with the condition in *Leptauchenia*. The canines are as well developed as in *Oreodon*.

MERYCHYUS ELEGANS, Leidy.

This species is founded on several halves of upper and lower jaws, containing admirably preserved series of teeth. The animal was nearly the same size as *Leptauchenia major*.

Length of the upper jaw, from the back molar tooth to the front of the incisors,	43 lines.
Length of upper series of seven molars,	37 "
Length of lower series of six molars	34 "
Length of upper series of true molars,	22 "
Length of lower series of true molars	23 "
Depth of lower jaw at first true molar,	11 "
Depth of lower jaw at last true molar	15 "

Merychyus medius, Leidy.

The second species is founded upon a fragment of the lower jaw, containing the true molars, an isolated upper last true molar, and an isolated upper canine tooth.

Length of series of lower true molars,	34 lines.
Antero-posterior diameter of the upper last true molar,	14½ "

Merychyus major, Leidy.

This species is proposed upon a fragment of the upper jaw containing the last pair of premolars and the succeeding pair of true molars. The latter teeth differ from the isolated upper molar of the preceding species in possessing a well defined basal ridge, of which the faintest traces only exist in *M. elegans* and *M. medius.*

Length of space occupied by the two premolars and succeeding two true molars,	44 lines.
Antero-posterior diameter of second true molar,	16 "

SOLIPEDIA.

Anchitherium (Hypohippus) affinis, Leidy.

A single specimen consisting of the crown of an upper molar tooth, in Dr. Hayden's collection, has the same form as the corresponding teeth of *Anchitherium*, except that the outer surfaces of its external lobes present no trace of median rising. It indicates an animal larger than *A. aurelianense* and about the size of *Palæotherium crassum.*

Antero-posterior diameter externally	14 lines.
Transverse diameter anteriorly	13½ "

Anchitherium (Parahippus) cognatus, Leidy.

The Niobrara collection contains three isolated unworn crowns of upper molar teeth, which have the same form as the upper deciduous molars of *Anchitherium Bairdi* or *A. aurelianense*, except that the outer extremity of the prolongation of the postero-internal lobe branches into several short folds. These latter have the same arrangement as similar but more numerous folds in the same position in *Merychippus.*

Length of the series of three molars,	31 lines.
Antero-posterior diameter of the first molar,	12 "
Transverse diameter of the first molar	8 "
Antero-posterior and transverse diameters of the third molar,	9 "

Independent of the remains of the anchitherioid genera *Parahippus* and *Hypohippus*, the collection made by Dr. Hayden contains numerous fragments of the skeleton of apparently six different equine animals, which, however, exhibit such an interchange of characters, that at present it appears impossible to specify the isolated teeth and bones. The following genera and species appear to be indicated by the more characteristic specimens of the collection.

Equus excelsus, Leidy.

This species is about the size of the largest variety of the recent Horse, as indicated by molar teeth and bones of the limbs. The teeth do not differ in constitution from those of the recent Horse; and none of them present a greater degree of complication of the enamel folds on their triturating surface.

Equus (Protohippus) perditus, Leidy.

A second species of Horse, of small size, is especially indicated in the Niobrara collection, by a fragment of an upper jaw containing the posterior four molars. The portion of jaw is like the corresponding part in the recent Horse. The molar teeth have their crowns about one-fourth worn. The enamel folds on the triturating surfaces are even less complex than in the recent Horse, and the antero-internal fold or column has the same form, direction and mode of continuation as the postero-internal one. The space occupied by the four teeth is about three inches in length, and about ten lines in breadth. Dr. Hayden's collection also contains bones of the limbs which correspond in relative size with the jaw and teeth above noticed.

Figure 1, plate 7, of M. Gervais, Rech. s. l. Mammiferes Fossiles de l'Amérique méridionale, apparently represents a species of the same equine subgenus as the above. No extent of attrition of the corresponding teeth of the domestic Horse will produce the same appearance indicated in this figure.

MERYCHIPPUS, Leidy.

This genus is a much more remarkable one than could have been anticipated from an examination of the specimen alone from which it was first characterized. The specimen alluded to consists of the anterior upper two large molars, contained in a small fragment of the jaw, and was obtained by Dr. Hayden, at Bijou Hill. The two teeth are intermediate in form to the corresponding ones of *Anchitherium*, and the upper true molars of the Deer, and they bear a strong resemblance to those referred above to the anchitherioid genus *Parahippus*. From the teeth of the latter, they differ only in having their intermediate lobes prolonged posteriorly past the inner conical lobes, so as to make them assume the appearance of the inner lobes of the upper true molars of ruminants.

In a fragment of the upper jaw of a young animal, in the Niobrara collection, apparently belonging to a second species of *Merychippus*, the second and third temporary molars and their permanent successors are contained. The temporary molars have the same form as the teeth from which the genus was first characterized would have, in a more worn condition. They are invested with cementum, though in less quantity than is usual in the Horse, and it is more readily detached, which appears to have been the case in the two teeth from Bijou Hill. The crowns of the permanent teeth contained within the fragment of jaw under examination have the same form as the corresponding teeth of the recent Horse, with the modifications above noticed characterizing the subgenus *Protohippus*.

MERYCHIPPUS INSIGNIS, Leidy.

Proc. A. N. S. viii. 311; 1857, 89.

This species was characterized from the fragment of jaw containing what now appear to me to be the upper anterior two temporary molars, from Bijou Hill. The Niobrara collection contains a portion of the upper jaw, which appears to belong to this species, having an entire series of permanent molars, (exclusive of the small one,) so far worn as to be inserted by fangs. The series of teeth occupy a space of almost four inches in length and ten lines in breadth.

MERYCHIPPUS MIRABILIS, Leidy.

Appears to be a distinct species from the former, of larger size. It is indicated in the Niobrara collection, by a specimen previously noticed, consisting of a fragment of the upper jaw, containing the second and third temporary molars and their permanent successors. Another specimen, in the same collection, belonging apparently to this species, consists of a fragment of the upper jaw of an adult individual, containing the back four molars, which are so far worn as to be inserted by fangs. The four teeth occupy a space of three and one-third inches in length and an inch in breadth.

The two fragments of jaws, above mentioned, have a deep depression or lachrymal fossa in advance of the orbit, as in the Deer, Oreodon, &c.

HIPPARION S. HIPPOTHERIUM OCCIDENTALE, Leidy.

Hipparion occidentale: Pr. A. N. S. vii. 59; 1857, 89.

The remains of this species were originally discovered by Dr. Hayden in a superficial deposit at White River, Nebraska. A number of molar teeth in the Niobrara collection appear to belong to the same species.

HIPPARION S. HIPPOTHERIUM SPECIOSUM, Leidy.

Hipparion speciosum: Pr. A. N. S. viii. 311; 1857, 89.

The remains of a smaller species of *Hipparion* than the preceding, were originally discovered by Dr. Hayden on Bijou Hill. Numerous teeth of the species are contained also in the Niobrara collection.

PACHYDERMATA.

RHINOCEROS CRASSUS, Leidy.

The Niobrara collection contains small fragments of two lower jaws of young animals, a much worn upper incisor, a last upper molar, and an upper premolar, apparently of the deciduous series, of a species of Rhinoceros, which appears to have had almost the same size and formula of dentition as the recent Indian Rhinoceros, (*R. indicus.*)

One of the fragments of lower jaws, consisting of the symphysial portion with sockets for four incisors, indicates these to have had the same relation of size and form as in *R. indicus.*

The upper lateral incisor has nearly the form and size of the corresponding tooth of *R. indicus.* The antero-posterior diameter of its crown is two and one-third inches, and its transverse diameter three-fourths of an inch.

The last upper molar, which belonged to an old individual as indicated by its worn condition, is of the form usual in most species of living Rhinoceros. Its antero-posterior diameter internally is two inches, and its oblique diameter posteriorly about half an inch more.

The upper deciduous premolar has the narrower portion of its crown anteriorly. The triturating surface of the specimen presents a tract of dentine on the outer wall and summits of the inner lobes of the tooth. The outer wall has a median ridge externally, corresponding to the most elevated point of its triturating surface. The anterior border of the outer wall has the same form as the posterior one, but is shorter and more prominent. The inner lobes are embraced by a strong basal ridge, as in *R. occidentalis* and *Aceratherium incisivum.* The antero-internal lobe curves inward and backward, and the succeeding lobe is transverse. Three conspicuous vallies bound the lobes, of which the middle one is deepest and the anterior one least so. From the outer wall of the tooth two folds project into the middle valley, and the posterior of these join one springing from the anterior face of the postero-internal lobe, thus isolating a deep pit from the valley. If the fossil tooth were worn away to a level with its basal ridge it would exhibit four distinct enamel pits ; one corresponding to the outer end of the anterior valley, two for the middle valley, and one for the posterior valley.

Antero-posterior diameter of the tooth externally,	19 lines.
Transverse diameter of the tooth posteriorly,	19 "
Transverse diameter of the tooth anteriorly,	16 "

MASTODON (TETRALOPHODON) MIRIFICUS, Leidy.

One of the most interesting discoveries of Dr. Hayden in the pliocene deposit of the valley of the Niobrara, is the greater portion of the lower jaw of a Mastodon, most undoubtedly distinct from that species whose remains are so abundantly found in later deposits in the United States. The specimen belonged to an old individual, as the last molar tooth had protruded and is considerably worn off at its anterior two-thirds ; and it indicates a much smaller animal than the *M. ohioticus.* The form of the jaw is like that of the existing Elephant of India. A single tooth, the last molar, occupies each side of it, and resembles the corresponding one of *M. angustidens*, of Europe, or of *M. sivalensis*, of the Sivalic Hills, of India. The crown measures nine inches antero-posteriorly, and three and a half inches transversely, and possesses six transverse rows of conical lobes closely crowded. In advance of the sixth molars, preserved in the specimen, no traces of alveoli are left for preceding teeth, but a sharp sigmoid ridge extends to the front of the jaw.

The greatest breadth of the jaw outside the position of the molars is	15 inches.
Length from back of last molar to anterior end of the jaw,	16 "
Length of the sigmoid ridge in advance of the molars,	9 "

ELEPHAS (EUELEPHAS) IMPERATOR, Leidy.

The Niobrara collection also contains the anterior portion of an upper molar tooth of an Elephant of larger proportions than any which are known to us The triturating surface is within a line or two of five inches in breadth, and within a space of seven inches only eight enamel folds or double plates exist. In the most thick plated variety of teeth of the *Elephas americanus* which we have seen, in the same space ten folds were counted. As in the latter, *E. primigenius*, and the recent Elephant of India, the enamel plates become worn on the triturating surface into transverse, strongly crenulated ellipses.

The fragment of the tooth has been assumed to belong to an unnamed species from the fact that it was found in association with a fauna very distinct from any previously noticed.

CHELONIA.

TESTUDO (STYLEMYS) NIOBRARENSIS, Leidy.

The Niobrara collection contains numerous fragments of bones of the shell of a species of emydiform, Land Turtle, from individuals of different ages. The fragments do not permit the restoration of any extent of either the carapace or sternum, but they are sufficient to indicate that the species grow to the size of the *Testudo nebrascensis*, which it also resembled in structure and form, except that the anterior and posterior marginal plates are strongly everted, while they are only slightly so in the species just named.

Descriptions of new species of Neuropterous Insects, collected by the North Pacific Exploring Expedition under Capt. John Rodgers.

BY P. R. UHLER.

LIBELLULA Linn.

1. *L. Japonica.* ♂ Fuscous, pubescent; labium at base, spot and lower margin of the labrum, superior portion of the sides of the front, line between the antennæ, vertex, posterior lobe of the eyes and pubescence of the entire head black; labial palpi, labrum and spots upon the posterior lobe of the eyes yellowish; front subbilobate, and together with the stemmata testaceous; eyes and occiput brownish, the latter with long black pubescence: thorax fulvous, with a middle longitudinal black line, and a humeral and pleural oblique one, both of which are double, the humeral one confluent at the origin of the wing, the other hardly so; a pale testaceous spot occupies the surface between the two pairs of double lines, and a trigonal one behind the posterior line, surface between the pairs of wings pale, posterior lateral edge of the pectus black; wings hyaline, sub-infuscate at their origin, pterostigma yellowish-fuscous, narrow, margined anteriorly and posteriorly with a black nervule, costal nervule pale fulvous in the middle, blackish at each end: abdomen trigonal, sub-depressed, plumbeous, four basal segments fuscous, lateral and middle carina and transverse elevated edges of the segments black, a small lanceolate yellow spot upon the last segment, occupying its whole length, venter blackish, with a yellow spot upon each side of the segments, spots becoming gradually smaller as they advance posteriorly; caudal appendages black, sub-fusiform, acute, anal one broad, triangular, dilated in the middle, sub-truncate at tip, about one-fourth shorter than the caudal ones: legs blackish, coxæ and posterior surface of the anterior femoræ pale.

Hakodadi, Japan.

Length of posterior wing 15 lines. Pterostigma 1½ lines. Total length 20 lines. Three rows of discoidal areolets, 12 antecubital cross-nervules.

2. *L. phalerata.* ♀ Slender, yellowish : labium, labrum, epistoma and front testaceous ; tips of mandibles, line dividing the epistoma from the front, upper excavated portion of the front, depressed surface around the vertex, antennæ, base of the vertex posteriorly, occiput and ground of the posterior eye-lobe black; epistoma with an oblique depression each side, vertex slightly excavated and together with the eyes brownish, three yellow spots upon each posterior eye-lobe, ocelli reddish, middle one largest and tinged with brown ; face rough and pubescent ; thorax hairy, with black suture upon the pleura, and two lines upon each humerus running to the base of the head also black, elevated edges upon the origins of the wings, surface between the wings, and thoracic middle carina blackish ; wings hyaline, cellules large, bases of the posteriors tinged with fulvous, costal and subcostal nervules, and pterostigma dark brown, triangle crossed by a single nervule, having the sides a little sinuous, two rows of discoidal areolets, eight antecubital and five cubital cross-nervules, membranule small, a little dusky ; abdomen with a dorsal irregular line, dilating upon the sixth and seventh segments, entirely covering the three posterior ones, a lateral one, interrupted, dilating into a broader patch upon the apices of the fourth, fifth and sixth segments, and branching off running obliquely forward upon the third, an elevated, fine, transverse line upon the second and third segments, which curve upon the sides, run a little obliquely forward and join the line which occupies the transverse edge of the segment, another lateral carinate line commencing against the transverse line of the third segment and extending to the tip of the eighth ; venter with a black line in the middle ; caudal and anal appendages yellow, pubescent, the former cylindrical, acute, more than twice the length of the latter ; vulvar scale extending to the middle of the ninth segment, a little elevated and triangular ; legs yellow, internal and lateral surface of the femoræ and tibæ, spines upon the latter, and tarsi black.

Takanosima, Japan.

Length of posterior wing 11 lines. Pterostigma 1⅜ lines. Abdomen 9½. Cerci ½. Total length 14.

3. *L. speciosa.* ♀ Yellowish testaceous ; base of labium, tips of mandibles. line behind the front, antennæ, vertex in front and spots upon the posterior eye lobe black ; remaining portions of the head yellowish ; labrum, nasus, epistoma and front well defined, separated by sutures ; epistoma each side, inferiorly, and front with sharp, slightly elevated margins ; face clothed with blackish hairs, eyes touching in a very small part of their superior curvature, occiput yellow, hairy, with a black spot each side ; prothorax with the posterior lobe very prominent, slightly emarginate above, clothed with long hairs ; a double line upon the humerus, two lines upon the pleura and elevated edges between the wings black ; wings hyaline, narrowly tipped with brown, costal nervure and subcostal cross-veins pale-brown, pterostigma dark brown margined with a black nervule, triangle very acute, traversed by one nervule, three rows of discoidal areolets, thirteen cubital cross-nervules, sixteen costal ones, membrane large, blackish : abdomen yellowish with the three first segments a little dilated, second and third with a transverse elevated line, the latter connected with the transverse, elevated edge of the segment by another elevated, lateral line ; a black line each side dilating upon the apices of the posterior segments and almost covering the penultimate one, medial and lateral carinate edges deep black, antepenultimate segment a little dilated, ultimate segment and appendages yellow, vulvar margin small, deeply emarginate, cerci fusiform, acute : legs black, a yellow line above and beneath upon the anterior femoræ, coxæ and basal superior surface of the posterior femoræ also yellow, spines of all the legs long, black.

Takanosima and Simoda, Japan.

Length of posterior wing 19 lines. Pterostigma 2 lines. Total length 2 inches.

CORDULIA Leach.

C. viridi-ænea. ♀ Labium and rhinarium testaceous, face brassy-greenish, villous, front coarsely punctured, deeply emarginate, antennæ and eyes pale brown, vertex dark green, not greatly elevated ; thorax brassy green with two oblique, white vittæ upon the pleura; wings with a slightly yellowish tint, nervures pale brown, pterostigma pale fulvous, triangles of all the wings crossed by one nervule, eight cross-veins to the costal, six between the point-cubital and the pterostigma; membranule white; abdomen depressed, segments brassy with a pale testaceous, interrupted stripe each side, beneath dull testaceous ; caudal appendages long, hairy, sub-fusiform, acuminate ; vulvar scale elongated, tapering, entire, extending as far as the inferior tip of the ninth segment.

Hakodadi, Japan.

Length of posterior wing 17½ lines. Pterostigma 1½ line. Abdomen 17. Cerci 2. Total length 25.

PANORPA, Linn.

P. leucoptera. ♀ Head black above, testaceous upon the antennal region. rostrum dark testaceous, with a black line each side, palpi testaceous with a piceous tip, antennæ dusky, eyes black, with the posterior lobe pale testaceous; thorax pale testaceous, a little blackish upon the prothorax, mesothorax with an irregular black superior margin, with which four spots of the same color are connected against the origin of the wings; wings lactaceous, costal nervule black, discoidal aud most of the transverse nervules whitish, apical longitudinal nervules brown ; three pale brown spots upon the sub-costal areole, two of which are enclosed within it, one at the origin, the other in the middle, the third, runs from the parostigmal areole to the middle of the wing ; several small, transverse spots are also found near the posterior margin and a large one near the apex; legs testaceous, origins of the tarsal joints and nails blackish ; abdomen dull testaceous, the three basal articles and apices of the two next blackish, anal appendages dusky.

Hakodadi, Japan.

Length to tip of abdomen 7¼ lines. Alar expanse 14½ lines.

Prodromus descriptionis animalium evertebratorum quæ in Expeditione ad Oceanum Pacificum Septentrionalem, a Republica Federata missa, Cadwaladaro Ringgold et Johanne Rodgers Ducibus, observavit et descripsit

W. STIMPSON.

PARS. IV. *CRUSTACEA CANCROIDEA ET CORYSTOIDEA.*

CANCRIDÆ.

41. CANCER ANTENNARIUS, Stimpson; Bost. Jour. Nat. Hist. vi., pl. xviii.—In portu "San Francisco."

42. CANCER GRACILIS, Dana; U. S. Expl. Exped., Crust. i. 153; pl. vii. f. 2. —California.

43. CANCER MAGISTER, Dana; U. S. Expl. Exped., Crust. i. 151, pl. vii. f. 1. —In portu "San Francisco."

44. CANCER PRODUCTUS, Randall; Jour. Acad. Nat. Sci., Philad. viii. 116.—In portu "San Francisco."

45. ETISUS CONVEXUS, nov. sp. Parvulus; carapax perconvexus; areolis fere ut in *E.levimano*, sed magis prominentibus; superficie mediana et postica lævi, antice et lateraliter partim rugosa. Frons convexa. Margo antero-lateralis quinquedentata, angulo orbitæ incluso; dentibus sat prominentibus, apicibus parvis acutisque, interstitiis granulosis. Antennæ articulus basalis processu orbitam

attingente. Chelopoda mediocria, pæne levia; carpo manuque in fœminis supra paullo rugosis; carpo intus unidentato. Pedes ambulatorii compressi, supra infraque ciliati; dactylis subspinulosis. ♂ Carapacis long. 0·57; lat. 0·84 poll. *E. levimano* affinis, minor, carapace magis convexo.
Hab.—In portu "Simoda" Japoniæ; littoralis.

46. CARPILIUS MACULATUS, M. Edwards; Hist. Nat. des Crust. i. 382.—Tahiti.

47. CARPILIUS CONVEXUS, Ruppell; Krabben des rothen Meeres, 13; pl. iii. f. 2.—Loo Choo, Tahiti.

48. LIOMERA LATA, Dana; U. S. Expl. Exped., Crust. i. 161, pl. vii. f. 6.—Ad insulas "Amakirrima," prope "Loo Choo."

49. LIOMERA OBTUSA. *Xantho obtusus*, De Haan; Fauna Japonica, Crust. p. 47, pl. xiii. f. 5.—Ad insulam "Ousima;" sublittoralis.

50. LIOMERA SUBACUTA, nov. sp. Carapax ellipticus, leviter areolatus; superficie lævi, glabra, antice prope frontem et orbitas ruguloso-punctata. Margo antero-lateralis parte anteriori convexa, indistincte trilobata; et dentibus duobus posticis angularibus sat prominentibus, sulcis inter-jacentibus breviter in carapace productis. Frons vix prominens, profunde emarginata. Margo orbitalis inferior angulo interno dentiformi prominente. Chelopoda levia; carpo intus bidentato, dentibus parvis obtusisque; manu extus sulco submarginali; digitis sulcatis, apicibus acutis. Pedes ambulatorii glabri, pæne lævi, mero superne granulato. Carapacis long. 0·57; lat. 0·92 poll.
Hab.—Ad insulam "Loo Choo."

LACHNOPODUS, nov. gen. Carapax lævis, regione postica transversim convexa. Orbita margine externa trifissa v. trilobata, lobis parvis, obtusis. Antennæ ut in *Carpilio.* Gnathopoda intima lacinia ad apicem non furcata. Hectognathopoda ischio longitudinaliter sulcato; mero superficie versus angulum internum excavata, margine anteriore concava. Chelopoda manu facie externa sulcata. Pedes ambulatorii valde setosi, mero compresso, superne spinoso. *Liomeræ* affinis, sed carapace angustiore, pedibus setosis spinosisque.

51. LACHNOPODUS RODGERSII, sp. unica. Carapacis long. 1·04; lat. 1·55 poll.
Hab.—In freto "Gaspar."

52. ATERGATIS FLORIDUS, De Haan. Dana, loc. cit. pl. vii. f. 4. *Cancer ocyroe*, M. Edwards; Hist. Nat. des Crust. i. 375. In freto "Gaspar;" etiam ad insulam "Loo Choo."

53. ATERGATIS INTEGERRIMUS, De Haan; Fauna Japonica, Crust. p. 45, pl. xiv. f. 1.—Prope portum "Hong Kong"; sublittoralis, in rupibus.

54. DAÏRA PERLATA, De Haan. *Cancer perlatus*, Herbst.—Ad insulas "Amakirrima."

55. ZOZYMUS ÆNEUS, Leach; M. Edwards; Dana; loc. cit. i. 192, pl. x. f. 3. "Loo Choo" et "Tahiti."

56. ACTEODES SPECIOSUS, Dana; loc. cit. i. 198; pl. xi. f. 4.—Ad insulam "Hawaii"; inter madreporas e prof. 3 org.

57. ACTEODES BELLUS, Dana; loc. cit.; i. 196; pl. xi. f. 2.—Ad insulas "Bonin"; inter madeporas e profunditate parva.

58. ACTEODES AFFINIS, Dana; loc. cit. i. 198; pl. xi. f. 3.—Ad insulam "Ousima."

59. ACTEODES TOMENTOSUS, Dana. *Zozymus tomentosus*, M. Edwards; *Hist. Nat. des Crust.* i. 385.—Ad insulas "Loo Choo," "Amakirrima," "Ousima" et "Hong Kong."

60. ACTÆA PURA, nov. sp. Superficies superior corporis pedumque tota confertim tuberculata, pura, absque setis. Tubercula subæqualia, subconia, granu-

lata, quasi crystallina. Superficies inferior partim tuberculata, tuberculis depressis lævibus. Frons lobis medianis duabus prominentibus. Margo antero-lateralis valde convexa, quadrilobata, lobis prominulis, tuberculo mediano in utraque extante. Margo postero-lateralis brevis, concava. Oculi pedunculus margine anteriore granulatus. Hectognathopoda mero et margine interna ischii granulatis. Chelopoda grandia, digitis nigris sulcatis. Pedes ambulatorii dactylis spinulosis, spinis seriatis. ♂ Carapacis long. 0·61; lat. 0·78 poll.

Hab.—In portu Jacksoni Australiensi, et prope insulam "Hong Kong" Sinensem; in fundo limoso vel conchoso prof. 6–20 org.

61. ACTÆA SUBGLOBOSA, nov. sp. Corpus subglobosum, superficie superne tota villosa, subtus partim nuda. Carapax perconvexus, dorso æquali, sparsim granulato; areolis inconspicuis. Margo antero-lateralis regulariter curvata, quadrifissa, fissuris profundis. Margo postero-lateralis brevissima, profunde concava. Frons lobis medianis parvis, approximatis. Regio sub-hepatica lævis, nec granulata nec sulcata; porca pterygostomiana arcuata, lanosa. Sternum antice granulatum. Chelopoda brevia, robusta, granulata; digitis brevibus, ad apices decussantibus. Pedes ambulatorii vix granulosis. ♂ Carapacis long. 0·60; lat. 0·79.

Hab.—In mari Sinensi boreali; e prof. 24 org. Etiam in portu "Hong Kong."

62. ACTÆA PILOSA, nov. sp. Corpus et pedes ubique hirsuta, superne setis longioribus inter aliis sparsis. Carapax sat latus, antice regulariter arcuatus, distincte areolatus; areolis non valde prominentibus, granulatis. Margo antero-lateralis quadrilobatus. Margo postero-lateralis et posterior longitudine æquales. Frons deflexa; media prominente, bilobata. Regiones latero-inferiores granulosæ, non sulcatæ. Pedes granulosi. *A. hirtissimæ* affinis, sed carapace non profunde areolata et regione subhepatica subbranchialique non sulcatis. Carapacis long. 0·42; lat. 0·56 poll.

Hab.—In portu "Hong Kong."

63. XANTHO TRUNCATA, De Haan; Fauna Japonica, Crust. p. 66, pl. xviii. f. 4. In portu "Simoda" Japoniæ.

64. XANTHO PARVULA, M. Edwards; Hist. Nat. des Crust. i. 395. Ad insulam "St. Jago" archipelagi "Cape de Verdes."

65. XANTHODES ELEGANS, nov. sp. Carapax distincte areolatus, postice levior; superficie glabra, versus marginem anticum partim inequali. Margo antero-lateralis dentibus papilliformibus quatuor, angulo orbitæ non incluso. Orbita sat ampla, supra infraque dentibus parvis duobus. Regio latero-inferior convexa, lævis. Chelopoda carpo supra tuberculis scabriformibus ornato; manu extus sulcata, costis tuberculatis; digitis nigris. Pedes ambulatorii hirsuti. ♂ Carapacis long. 0·42; lat. 0·60 poll.

Hab.—In portu "Simoda" Japoniæ.

66. EUXANTHUS MELISSA. *Cancer melissa*, Herbst; Naturg. d. Krabben und Krebse, iii. 7. pl. li. f. 1. An *Euxanthus nitidus*, Dana; loc. cit. i. 174. pl. viii. f. 9, junior? In freto "Gaspar."

67. POLYCREMNUS VERRUCIFER, nov. sp. *P. ochtodæ* simillimus; differt magnitudine minore, carapace paullo augustiore, superficie antice leviore; verrucis chelopodorum minoribus, sat conicis et magis numerosis. ♂ Carapacis long. 0·63; lat. 0·76.

Hab.—In portu "Hong Kong"; vulgaris in fundo argillaceo, prof. 5 org.

68. HALIMEDE FRAGIFER, De Haan; loc. cit. p. 47. pl. xiii. f. 4. Prope "Hong Kong"; e fundo conchoso prof. 10 org.

69. CHLORODIUS CYTHEREA, Dana; loc. cit. i. 213. pl. xii. f. 2. Ad insulas Hawaienses; etiam "Ousima."

70. CHLORODIUS NIGER, Ruppell; Krabben des rothen Meeres, p. 20. pl. iv. f. 7. Dana; loc. cit. i. 216. pl. xii. f. 5. Ad insulas "Loo Choo" et "Tahiti."

71. Chlorodius monticulosus, Dana; loc. cit. i. 206. pl. xi. f. 9. Ad insulas "Loo Choo," "Bonin" et "Tahiti."

72. Chlorodius dentifrons, nov. sp. Carapax antice expansus, areolatus, sulcis longitudinalibus validis; linea transversa inter dentes laterales conspicua, ciliata. Areolæ partim granulatæ. Margo antero-lateralis quinque-dentata, angulo orbitæ incluso; dentibus parvis, acutis, æquidistantibus. Frons augustior, sat producta, quadridentata. Margo orbitalis fissuris conspicuis. Chelopoda superne rugulosa; carpo dentibus 2–3 parvis; manu superne dentibus 3–4 minutis, extus rugulosa. Pedes ambulatorii valde hirsuti, lateribus lævibus. ♂ Carapacis long. 0·33; lat. 0·445 poll. *C. electræ*, Herbst; pl. li. f. 6., affinis, sed fronte minus prominente, et dente antero-laterali quinto, quarto non superante.

Hab.—Ad insulam "Loo Choo."

73. Chlorodius exaratus, M. Edwards; Hist. Nat. des Crust. i. 402. Dana: loc. cit. i. 207. pl. xi. f. 11. = *C. sanguineus*, M. Edwards, Dana, etc. = *Cancer* (*Xantho*) *lividus*, De Haan; loc. cit. p. 48. pl. xiii. f. 6.+*C.* (*Xantho*) *affinis*, ejusd. p. 48. pl. xiii. f. 8.—Species admodum variabilis; vulgaris in Oceano Pacifico. Ab Expeditione lecta in portu "Hong Kong" Sinensi, et "Simoda" Japoniæ; et ad insulas "Ousima" "Loo Choo" "Bonin" et "Hawaii."

74. Chlorodius distinguendus. *Cancer* (*Xantho*) *distinguendus*, De Haan: loc. cit. p. 48. pl. xiii. f. 7. Forsitan varietas præcedentis. In portu "Hong Kong."

75. Chlorodius gracilis, Dana; loc. cit. i. 210. pl. xi. f. 13. Ad oras Sinenses prope "Hong Kong;" quoque insulas "Ousima" et "Kikaisima"; littoralis et sublittoralis.

76. Chlorodius cavipes, Dana; loc. cit. i. 212. pl. xii. f. 1. Ad insulas "Bonin."

77. Pilodius nigrocrinitus, nov. sp. Carapax bene areolatus, sulcis profundis. Superficies scabrosa, setosa, setis nigris, vel longioribus et flavis. Frons minus prominens, non profunde emarginata. Chelopoda manu carpoque subspinulosis. Pedes ambulatorii mero superne serrato. ♀ Carapacis long. 0·28; lat. 0·41. *P. pilumnoidi* affinis, sed carapace latiore, margine antero-laterali convexa, dentibus obtusis.

Hab.—In portu "Simoda" Japoniæ.

78. Pilodius granulatus, nov. sp. Carapax latus, bene areolatus, areolis bene granulatis et pubescentibus. Margo antero-lateralis quam postero-lateralis parce brevior, dentibus parvis denticulatis, denticulo mediano prominente. Chelopoda tuberculata; tuberculis majoribus, carpo intus dentibus parvis acutissimis duobus; manu tuberculis parvis, sparsis, subseriatis; digitis sulcatis, costis versus basim tuberculatis. Pedes ambulatorii superne granulati et pubescentes. ♂ Carapacis long. 0·29; lat. 0.44 poll.

Hab.—Prope "Hong Kong"; inter madreporas e prof. 1–2 org.

79. Cymo melanodactylus, De Haan; Dana; loc. cit. i. 225. pl. xiii. f. 1. Ad insulas "Hong Kong" et "Bonin;" inter madreporas.

80. Cymo Andreossyi, De Haan; Dana; loc. cit. i. 225. pl. xiii. f. 2. *Pilumnus Andreossyi*, Savigny. Ad insulas "Bonin."

81. Ozius truncatus, M. Edwards; Hist. Nat. des Crust. i. 406. pl. xvi. f. 11. In portu Jacksoni Austr.; littoralis.

82. Ozius frontalis, M. Edwards; Hist. Nat. des Crust. i. 406 (?) In portu "Hong Kong"; quoque ad insulas "Ousima" et "Kikaisima"; littoralis.

83. Ozius rugulosus, nov. sp. Carapax sat convexus, antice rugosus et granulosus. Frons quadridentata, dentibus sat validis obtusis. Margo anterolateralis sexdentata, (angulo orbitæ incluso,) dente posteriore parvulo post

dentem lateralem; dentibus anticis amplis, vix prominentibus. Corpus subtus tomentosum. Regiones subhepaticæ et subbranchiales granulosæ. Hectognathopoda mero antice emarginato. Chelopoda inequales, superne rugulosa; manu majore extus lævi; manu minore extus rugosa et tomentosa. Pedes ambulatorii articulis tribus dense tomentosis. ♂ Carapacis long. 0·85; lat. 1·27 poll.

Hab.—Ad insulas "Bonin"; littoralis, inter lapides.

84. PSEUDOZIUS MICROPHTHALMUS, nov. sp. *P. plano* valde affinis, sed carapace magis planato, fronte angustiore, oculis minoribus. ♀ Carapacis long. 0·43; lat. 0·72 poll.

Hab.—Ad insulas "Bonin."

SPHÆROZIUS, nov. gen. *Ozio* offinis. Corpus subglobosum, carapace angustiore, margine postero-laterali longiore. Antenna hiatum internum orbitæ occupans, articulo basali frontem non attingente. Margo frontalis et supraorbitalis continuæ, nec sinu nec incisura separatæ. *Pseudozius dispar*, Dana, ad hoc genus pertinet.

85. SPHÆROZIUS NITIDUS, nov. sp. Corpus parvum, subglobosum. Carapax convexus, lævis, nitidus; regione gastrica sulco longitudinali inconspicuo. Frons emarginata, media sat prominente. Dentes antero-laterales parvi, acuti. Chelopoda robusta, inæqualia; carpo lævi; manu supra extusque subtiliter granulosa. ♂ Carapacis long. 0·235; lat. 0·290 poll. A *P. dispari* differt dentibus antero-lateralibus acutioribus, et manu non tuberculata.

Hab.—In sinu prope "Hong Kong;" in ramo *Spoggodiæ* e rupe ad prof. 1 org.

HETEROPANOPE, nov. gen. *Panopeo* affinis. Palatum colliculo instructo, ad marginem buccalem anticum sat prominente. Frons deflexa. Orbita hiatu externo minuto. Abdomen maris septem-articulatum. *Panopeus dentatus*, *P. caystrus* et *P. formio*, Ad. et White, hîc pertinent.

86. HETEROPANOPE GLABRA, nov. sp. Carapax sat transversus, lævis, glaber; fronte recta, declivi, media emarginata. Margo antero-lateralis quinque-dentata, angulo orbitæ non prominente incluso, dentibus duobus proximis late rotundatis, duobus posticis acutis. Oculi grandes. Orbita hiatu externo parvulo; margine superiore et inferiore integris. Regio latero-inferior granulata. Hectognathopoda, sternum, et abdomen pubescentia. Chelopoda lævia; digitis deflexis, ad apices decussantibus. Pedes ambulatorii graciles, parum pilosi. ♂ Carapacis long. 0.32; lat. 0.495 poll. *P. caystro* A. et W. affinis, sed margine antero-laterali profundius inciso.

Hab.—In portu "Hong Kong."

87. HETEROPANOPE AUSTRALIENSIS, nov. sp. Carapax convexus, partim areolatus; superficie postice lævi, versus margines anteriores sparsim granulata. Margo antero-lateralis dentibus acutis quatuor, angulo orbitæ non incluso. Regio subhepatica granulata, dente parvulo sub dentem post angulum orbitæ. Frons media prominente bilobata, margine serrulata. Orbita hiatu externo distincto, angusto; margine inferiore denticulato, dente interno prominente. Chelopoda robusta; carpo granulato, intus unidentato; manu lævi. Abdomen et sternum pubescentia. ♂ Carapacis long. 0·40; lat. 0·525 poll.

Hab. In portu Jacksoni, Austr.; littoralis inter lapides limosos.

88.—HETEROPANOPE EUCRATOIDES, nov. sp. Carapax angustus, partim inæqualis, antice irregulariter et distante transversim lineolatus, lineis elevatis pubescentibus. Margo antero-lateralis quam postero-lateralis multo brevior, quadridentata; dente anterior (cum angulo orbitæ coalescente,) parvulo; dentibus tribus posticis validis, acutis, mediano minore. Frons profunde emarginata, ad finem sulci longitudinalis in regione frontali; media lobis duobus minutis. Orbita marginibus lævibus, hiatu vix conspicuo. Hectognathopoda sat hiantia, lævia. Regiones latero-inferiores læves. Chelopoda grandia, forma ut in *Eucrate;* mero dente prope extremitatem superiorem; carpo lævi; manu lævi, digitis deflexis. Pedes ambulatorii graciles, secundi paris longiores.

Sterni dimidia posterior et abdomen pubescentia. Abdomen maris angustum. Carapacis long. 0·32 ; lat. 0·40 poll.
Hab.—In portu "Hong Kong."

89. Pilumnus mus, Dana ; loc. cit. i. 240. (An = *P. vespertilio* Leach ?) In freto "Gaspar" et ad insulas "Loo Choo" et "Ousima."

90. Pilumnus rufopunctatus. nov. sp. Corpus et chelopoda superne tomentosa; pedes hirsuti. Carapax latus, postice lævis ; antice areolatus et tuberculis parvis subspiniformibus coccineis ad 20 ornatus, tribus approximatis in linea mediana. Margo antero-lateralis dentibus quinque ; primo (v. angulo orbitæ) inconspicuo ; secundo inferiore in regione subhepatica ; tertio ab angulo orbitæ distante ; tribus posterioribus sat conspicuis. Frons sat augusta, margine denticulata, in media vix emarginata. Orbita margine superiore 3–4 dentata ; inferiore sex-dentata. Chelopoda robusta ; carpo et manu superne extusque sparsim granulatis, granulis prominentibus ; manu majore subtus lævi. ♂ Carapacis long. 0·43 ; lat. 0·50 poll.
Hab.—In portu Jacksoni ; sublittoralis in locis limosis algosisque.

91. Pilumnus fissifrons, nov. sp. Corpus pedesque dense et breviter pubescentia. Carapax convexiusculus, antice areolatus, utrinque bituberculatus ; areolis bene pubescentibus distinctis ; sulcis lævibus. Superficies sub tomentum lævi. Margo antero-lateralis dentibus normalibus ; secundo subhepatico ; tribus posterioribus prominentibus acutis. Frons profunde emarginata vel bilobata, lobis prominentibus. Orbita margine superiore bi-emarginata ; margine inferiore crenulata, angulo interno dentiformi prominente. Chelopoda inæqualia, supra minute tuberculata ; manu subtus lævi. ♂ Carapacis long. 0·32 ; lat. 0·465 poll.
Hab.—In portu Jacksoni, Australiensi.

92. Pilumnus verrucosipes, nov. sp. Corpus et pedes superne breviter tomentosa, setis longis clavatis sparsis. Carapax latus, antice paullo areolatus, utrinque prominentia valida prope dentem antero-lateralem medianum. Dentes antero-laterales normales ; secundus subhepaticus ; tres posteriores validi, obtusi. Frons nuda, emarginata. Margo orbitalis inferior crassa, angulo interno prominente. Pedes toti superne verrucosi. Chelopodorum carpus verrucis novem, manus quinque ornata ; manus extus sparsim granulata. Pedes ambulatorii articulo penultimo et antepenultimo prominentiis magnis, utroque duabus. ♂ Carapacis long. 0·30 ; lat. 0·412 poll.
Hab.—In sinu "Simon's Bay" ad Promontorium Bonæ Spei ; in fundo arenoso prof. 11 org.

93. Pilumnus forficigerus, nov. sp. Carapax lævis, tomentosus. Margo antero-lateralis dentibus tribus posterioribus minutis ; tertio e angulo orbitæ remoto. Frons lata, emarginata, media parum prominente. Margo postero-lateralis concava. Regiones latero-inferiores et hectognathopoda superficie lævi, glabra. Chelopoda mediocria, superne tomentoso ; carpo lævi ; manu tuberculata, tuberculis sat parvis prominentibus, albis, sparsis in manu minore. Manus major subtus glabra, subtiliter granulata. Manus minor digitis compressis, forficiformibus, marginibus internis acutis, pæne rectis, non dentatis. Pedes ambulatorû graciles. ♂ Carapacis long. 0·27 ; lat. 0.36 poll.
Hab.—Prope oras insulæ "Ousima" ; inter Sertularias et Botryllos e prof. 30 org.

94. Pilumnus lapillimanus, nov. sp. Carapax tomentosus, superne et postice subplanatus ;—areolatus, areolis numerosis, sub tomentum partem celatis. Dentes antero-laterales normales, secundus subhepaticus, tres posteriores parvi. Margo supra-orbitalis denticula. Frons sat lata, margine denticulata, lobis medianis late rotundatis deflexis. Chelopoda robusta, carpo superne pubescente, ad angulum internum papilloso ; manu nuda, papillis conicis lapidescentibus v. subcrystallinis roseis confertis ornata ; digitis brevi-

bus; digito immobili triangulari. Manus sinistra digitis forficiformibus ut in *P. forficigerus*. Pedes ambulatorii tomentosi et partim setosi. Abdomen tomentosum. ♂ Carapacis long. 0·50; lat. 0·65 poll.
Hab.—In mari Sinensi Boreali, lat. bor. 23°; in fundo arenoso et conchoso prof. 25 org.

95. Pilumnus hirsutus, nov. sp. Carapax et pedes hirsuti, setis longitudine variabilibus. Carapax latus, sat inflatus, vix areolatus, pæne lævi. Margo antero-lateralis brevis, quadridentata, (angulo orbita incluso,) dentibus acutis. Frons emarginata; serie setarum longarum submarginali. Margo orbitalis inferior denticulata. Chelopoda sat brevia; manu majore superne irregulariter tuberculata, subtus lævi; manu minore superne spinulosa, extus sparsim granulosa. ♂ Carapacis long. 0·31; lat. 0·43 poll.
Hab.—In mari Sinensi boreali, et prope insulam "Ousima"; in fundo conchoso prof. 20–30 org.

96. Pilumnus marginatus, nov. sp. Carapax pedesque supra subtusque pilosa. Carapax transversus, antice areolatus et linea elevata marginatus; areolis non prominentibus; superficie pæne lævi. Margo antero-lateralis dentibus sat cristatis; posterioribus acutis. Manus extus aspera vel granulis rugosa. Pedes ambulatorii graciles, valde setosi. ♂ Carapacis long. 0·275; lat. 0·355.
Hab.—Ad oras insulæ "Loo Choo."

97. Pilumnus dorsipes, nov. sp. Corpus globosum. Carapax sat areolatus, areolis granulatis et pubescentibus. Margo antero-lateralis quadridentata, angulo orbitæ incluso, dentibus æqualibus acutis, marginibus denticulatis. Margo postero-lateralis valde concava, excavata. Frons lobis medianis prominentibus, æqualiter rotundatis. Regiones latero-inferiores versus margines sulcatæ, sulcis inter dentes marginales egredientibus. Chelopoda grandia, inequalia, superne breviter pubescentia; manu superficie supero-exteriore, et margine infero-interiore granulatis, granulis prominentibus. Pedes ambulatorii sat breves, subdilatati, pubescentes. ♂ Carapacis long. 0·41; lat. 0·54 poll.
Hab.—In portu "Hong Kong"; e fundo conchoso prof. 10 org.

Eriphidæ.

98. Ruppellia annulipes, M. Edwards; Dana; loc. cit. i. 246. pl. xi. f. 4. Ad oras insulæ "Loo Choo."

99. Eriphia levimana, Latreille; Dana; loc. cit. i. 249. pl. xiv. f. 7. Ad oras insularum "Loo Choo" et "Kikaisima"; littoralis, rupicola.

100. Eriphia Smithii, Mac Leay; Dana; loc. cit. i. 251. Ad oras oceanicas insulæ "Hong Kong."

101. Eriphia scabricula, Dana; loc. cit. i. 247; pl. xiv. f. 5. Ad insulam "Ousima."

102. Eriphia spinifrons, Latreille; M. Edwards; Hist. Nat. des Crust. i. 426. Ad insulam Madeira.

103. Trapezia maculata, Dana; loc. cit. i. 256. pl. xv. f. 4. Ad insulam Hawaii.

104. Trapezia reticulata, nov. sp. Carapax in fœminis quam in maribus latior. Dens lateralis parvus, acutus. Frons sinuosa ut in *T. cymodoce*, (Dana.) Chelopoda mediocria, depressa; mero margine interno convexo, serrato, dentibus 5-6, exterioribus minus prominentibus; carpo obtuso. Pedes ambulatorii vix pubescentes; dactylo quam articulo penultimo breviore. Color superne pallide luteolus; carapax pedesque regulariter coccineo-reticulati, areolis parvulis numerosis. ♂ Carapacis long. 0·30; lat. 0·35 poll. *T. areolatæ* affinis, dente laterali minore, areolis coloris multo minoribus.
Hab.—Ad oras insulæ "Loo Choo"; inter ramos madreporarum.

105. Tetralia glaberrima, Dana ; loc. cit. i. 263, pl. xvi. f. 3. Ad insulam "Hong Kong."

106. Tetralia lævissima, nov. sp. *T. glaberrimæ* valde affinis, sed fronte vix denticulata ; manu majore brevi, crassa ; digitis late hiantibus, intus non dentatis ; dactylo valde curvato, superne subtiliter granulato. Carapacis long. 0·273 ; lat. 0·298 poll.
Hab.—Ad insulam "Ousima."

Portunidæ.

107. Portunus strigilis, nov. sp. Carapax pedesque parum pubescentes. Carapax convexiusculus, sat areolatus, transversim lineolatus, lineis elevatis undulatis, confertis. Margo antero-lateralis quinque-dentata, dentibus mediocribus. Frons interantennalis lata, prominens, vix convexa, laminiformis, margine undulata, indistincte trilobata. Chelopoda scabricula ; manu brevi, extus costata, spina parva prope basim dactyli ; carpo ad apicem dente acuto. Pedes natatorii dactylo lanceolato, longe ciliato. Carapacis long. 0·28 ; lat. 0·30 poll.
Hab.—In sinu "Kagosima" Japoniæ ; in fundo conchoso prof. 20 org.

108. Scylla tranquebarica, Dana. *Lupa tranquebarica*, M. Edwards ; Hist. Nat. des Crust. i. 448. Var. serratus ; (*Portunus serratus*, Ruppell ; Krabben des rothen Meeres, p. 10, pl. ii. f. 1,) vulgaris, sæpe in aquis subsalinis in æstuario fluvii "Canton" Sinensis. Var. oceanica, Dana, ad insulam "Loo Choo."

109. Lupa pelagica, Leach ; M. Edwards ; Hist. Nat. des Crust. i. 450. Vulgaris in mari Sinensi.

110. Lupa sanguinolenta, Desmarest ; M. Edwards ; Hist. Nat. des Crust. i. 451. In portu "Hong Kong."

111. Lupa Sayi, Gibbes ; Proc. Am. Assoc. 1850, p. 178. Dana ; loc. cit. i. 273, pl. xvi. f. 8. In mari Atlantico boreali.

112. Amphitrite gracilimanus, nov. sp. Carapax convexus, pubescens, lineis transversis, elevatis, granulatis, interruptis, ad sex ornatus. Margo antero laterales novem-dentata dente postico duplo longiore. Frons interantennalis in media fissa, quadridentata ; dentibus medianis quam lateralibus paululum prominentioribus. Oculi pergrandes, globosi. Chelopoda maris elongata, pubescentia ; mero lato, crasso, superne squamoso, margine anteriore quadridentata, posteriore bidentata, dente exterior terminali, interiore submediano ; carpo gracili, bidentata ; manu gracili, longitudinaliter acute costata, superne trispinosa ; digitis quam palma paulo brevioribus, gracillimis, compressis. Pedes ambulatorii graciles, tertii quam quarti paris parum longiores. Abdomen maris triangulare, sed sat gracile. ♂ Carapacis long. 0·68 ; lat. 122 poll.
Hab.—Prope oras Sinenses, lat. bor. 23° ; in fundo limoso prof. 16 org.

113. Amphitrite hastatoides, De Haan ; loc. cit. p. 39, pl. i. f. 3. In sinu bus prope "Hong Kong" ; in fundo limoso, prof. 5-8 org.

114. Amphitrite gracillima, nov. sp. Parvula ; spina laterali longissima ; angulis posticis spiniferis ; dentibus antero-lateralibus minutis. Pedes ambulatorii longi ut in *A. tenuipede*. *A. longispinæ*, *vigilantisque* affinis, sed manu spina una solum prope basim digiti. Ab *A. hastatoide* differt frontis dentibus lateralibus quam medianis prominentioribus, margine orbitali supra dentifera, et chelopodis gracilioribus.
Hab.—In sinu "Port Lloyd" ad insulas "Bonin" ; fundo limoso prof. 10 org.

115. Amphitrite Haanii. *A. gladiator*, De Haan ; loc. cit. p. 29, pl. i. f. 5. (vix *L.gladiator*, M. Edwards.)

In mari Sinensi, lat. bor. 23°; ad insulam "Tanegasima"; et in sinu "Kagosima"; in fundis arenosis prof. 12–20 org.

116. AMPHITRITE MEDIA, nov. sp. *A. Haanii* affinis, sed dente laterali breviore, quam proximo vix duplo longiore. Dentes antero-laterales approximati. Frons interantennalis dentibus medianis et lateralibus æqualibus, non disparibus ut in *A. speciosa.* Chelopoda fœminæ mero brevi, lato. ♂ Carapacis long. 0·88; lat. ·32 poll.
Hab.—In freto "Gaspar."

117. AMPHITRITE SPECIOSA, Dana, loc. cit. i. 276, pl. xvii. f. 1. *A. gladiator,* De Haan; loc. cit. pl. xviii. f. 1 (?). Ad insulas "Tanegasima" et "Loo Choo"; fundo arenoso prof. 12 org.

118. CHARYBDIS ANISODON, De Haan; loc. cit. p. 42. In portu "Hong Kong"; e fundo limoso, sex org.

119. CHARYBDIS CRUCIFERA, Dana. PORTUNUS CRUCIFER, Fabr.; Herbst; Naturg. d. Krabben und Krebse, pl. xxx. f. 1. In portu "Hong Kong"; vulgaris in fundis limosis prof. 6-20 org.

120. CHARYBDIS VARIEGATA, De Haan; loc. cit. p. 42, pl. i. f. 2. In mari Sinensi boreali.

121. CHARYBDIS SEXDENTATA, De Haan; loc. cit. p. 41, pl. xii. f. 1. In portu "Hong Kong"; littoralis in locis arenosis lapidosisque.

122. CHARYBDIS GRANULATA, De Haan; loc. cit. p. 42, pl. i. f. 1. In fretis prope insulam "Hong Kong"; in fundo limoso et conchoso, prof. 10 org.

123. CHARYBDIS MILES, De Haan; loc. cit. p. 41, pl. xi. f. 1. In portu "Hong Kong."

124. CHARYBDIS TRUNCATA. THALAMITA TRUNCATA, De Haan; loc. cit. p. 43, pl. ii. f. 3. et pl. xii. f. 3. In portu "Hong Kong."

125. THALAMITA ADMETE, M. Edwards; Hist. Nat. des Crust. i. 459. Dana; loc. cit. i. 281, pl. xvii. f. 5. Ad insulam "Ousima."

126. THALAMITA INTEGRA, Dana; loc. cit. i. 281, pl. xvii. f. 6. Ad insulas "Ousima" et "Kikaisima."

127. THALAMITA SIMA, M. Edwards; Hist. Nat. des Crust. i. 460. In portu "Hong Kong."

128. THALAMITA CRENATA, Ruppell; Krabben des rothen Meeres, p. 6, pl. i. f. 2. Ad insulam "Loo Choo"; in æstuario parvo limoso sublittoralis.

129. THALAMITA DANÆ. *T. crenata,* Dana, loc. cit. i. 282, pl. xvii. f. 7. (non Ruppell.) In portu "Hong Kong"; littoralis.

130. THALAMITA PICTA, nov. sp. Parva, flavo coccineoque variegata. Carapax pubescens, lineis transversis elevatis ut in *T. Danæ* dispositis. Margo antero-lateralis dentibus quinque, quinto quam tertio parum minore, quarto parvulo. Frons media paulo prominente, margine profunde crenata, dentibus sex; duobus medianis parvis rotundatis, proximis latis, externis parvis acutis. Antennæ articulus basalis crista brevi, laminiformi, lævi, valde prominente, ultra frontem extensa. Chelopoda supra squamosa, spinifera, et pubescentia; spina ad apicem carpi longa; manu extus costata. Pedes natatorii articulo penultimo margine postico spinoso. ♂ Carapacis long. 0·470; lat. 0·745 poll.
Hab.—Ad insulum "Ousima"; littoralis inter lapides et rupes.

131. THALAMITA CRASSIMANA, Dana; loc. cit. i. 284, pl. xvii. f. 9. *T. prymna,* De Haan; loc. cit. p. 43, pl. xii. f. 2 (non Herbst, M. Edwards.) Ad insulam "Loo Choo"; fundo limoso prof. 1 org.

132. ANISOPUS PUNCTATUS, De Haan; loc. cit. p. 44, pl. ii. f. 1. Prope oras insularum "Niphon" et "Jesso," Japoniæ Borealis; in fundis arenosis.

CORYSTOIDEA.

133. TRICHOCERA GIBBOSULA, De Haan ; loc. cit. p. 45, pl. ii. f. 4. et pl. xiii. f. 3. In mari prope oras orientales insulæ "Niphon" ; fundo arenoso prof. 30 org.

134. KRAUSSIA NITIDA, nov. sp. Carapax suborbicularis, nitidus, pæne lævis, obsolete lineolatus. Frons interantennalis valde prominens, media profunde fissa, bilobata, lobis profunde excavatis ; margine ciliato. Margo orbitalis superior fissura valida. Margo antero-lateralis ciliata, minute crenulata, incisuris inconspicuis tribus v. quatuor dentes significantibus. Chelopoda vix rugulosa. ♂ Carapacis long. 0·32 ; lat. 0·36 poll. Differt a *K. integro* carapace augustiore et fronte magis prominente ; a *K. rugulosa* et *porcellana* spinis lateralibus nullis.

Hab.—In mari Sinensi Boreali et in sinu "Kagosima" ; fundo arenoso prof. 20–24 org.

135. CHEIROGONUS ACUTIDENS, nov. sp. *C. hippocarcinoide, serratoque* affinis, sed dente laterali v. majore longo, graciliore ; post quam dente parvulo intermedio. ♂ Carapacis long. 1·45 ; lat. (inter apices dentium) 1·83 poll. Vulgariter duplo major.

Hab.—In sinubus freti "Tsugar" inter insulas "Jesso" et "Niphon."

136. NAUTILOCORYSTES OCELLATUS, M. Edwards ; Hist. Nat. des Crust. ii. 149. *Dicera octo-dentata*, De Haan, Krauss. Ad Promontorium Bonæ Spei in sinu "Simon's Bay" ; fundo arenoso prof. 12 org.

Descriptions of New Species of Unio, from Tennessee, Alabama and North Carolina.

BY ISAAC LEA.

UNIO TURGIDULUS.—Testâ lævi, ellipticâ, subæquilaterali, ad latere vel paulisper planulatâ vel impressâ ; valvulis crassis, anticè crassioribus, natibus tumidis, subelevatis incurvisque; epidermide luteo-olivaceâ, crebrè virido-radiata ; dentibus cardinalibus subgrandibus, elevatis, subconicis, crenulatis, in utroque valvulo duplicibus; lateralibus curtis, subcrassis subrectisque ; margaritâ albâ et iridescente.

Hab.—Cumberland River, Tennessee, Dr. Troost and T. C. Downie. Florence. Alabama. Rev. G. White.

UNIO PERRADIATUS.—Testâ lævi, subtriangulari, inflatâ, posticè obtusè biangulatâ, subinæquilaterali; valvulis crassiusculis, posticè crassioribus ; natibus subgrandibus, tumidis et incurvis; epidermide nitidâ, luteâ et totâ virido-radiatâ; dentibus cardinalibus parviusculis, valdè crenulatis; in utroque valvulo duplicibus; lateralibus sub brevis, lamellatis subcurvisque ; margaritâ albâ e iridescente.

Hab.—Florence, Alabama. Rev. George White.

UNIO MEREDITHII.—Testâ sulcatâ, subtrigonâ, vald compressâ, posticè obtusè angulata, inæquilaterali ; valvulis subcrassis, anticè crassioribus; epidermide croceâ ; dentibus cardinalibus subcrassis, crenulatisque; lateralibus crassis, curtis subrectisque ; margaritâ subcroceâ et iridescente.

Hab.—Tennessee River, Florence, Alabama. L. B. Thornton.

UNIO PYBASII.—Testâ lævi, ellipticâ, inflatâ, posticè obtusè angulatâ, inæquilaterali; valvulis subcrassis; natibus prominulis; epidermide tenebroso-fuscâ, obsoletè radiatâ; dentibus cardinalibus submagnis, obtusè angulatis, crenulatis; lateralibus longis, lamellatis curvisque; margaritâ vel albâ vel salmonis colore tinctâ et valdè iridescente.

Hab.—Tennessee River at Florence, Alabama. B. Pybas.

UNIO VIRESCENS.—Testâ lævi, ellipticâ, subinflatâ, posticè angulatâ, valdè; inæquilaterati ; valvulis subtenuibus, anticè crassioribus ; natibus prominulis ; epidermide nitidâ, luteo-viridi, obsoletè radiatâ, anticè tenebrosâ; dentibus, cardinalibus parvis, accuminatis, crenulatis, in utroque valvulo duplicibus; lateralibus longis, lamellatis rectisque; margaritâ albâ et valdè iridescente.

Hab.—Tennessee River, at Florence, Alabama. B. Pybas.

Unio neusensis.—Testâ laevi, oblongâ, subcompressâ, ad laterè planulatâ posticè tumidâ et biangulatâ, valdè inaequilaterali; valvulis subcrassis natibus prominulis; epidermè nigricantè, striatâ et eradiatâ; dentibus cardinalibus parviusculis, crenulatis, in utroque valvulo subduplicibus; lateralibus praelongis subcurvisque; margaritâ vel purpureâ vel salmonis colore tinctâ et iridescente.

Hab.—Neuse River, six miles from Raleigh, N. C. Prof. Emmons.

Unio purus.—Testâ laevi, ellipticâ, subcompressâ, posticè rotundatâ, inaequilaterali; valvulis subcrassis, anticè spissatâ; natibus subprominentibus; epidermide luteo-olivâ, glabrâ, ad umbones politâ, obsoletè radiatâ; dentibus cardinalibus submagnis, accuminatis, crenulatis, in utroque valvulo subduplicibus; lateralibus sublongis, lamellatis subcurvisque; margaritâ albâ et iridescente.

Hab.—Neuse River, six miles from Raleigh, N. C. Prof. Emmons.

Unio exactus.—Testâ laevi, ellipticâ, compressâ, posticè rotundatâ, inaequilaterali; valvulis subcrassis; natibus prominulis; epidermide tenebroso-rufâ, striatâ; dentibus cardinalibus parviusculis, crenulatis, in utroque valvulo duplicibus, lateralibus sublongis, lamellatis subrectisque; margaritâ albâ et iridescente.

Hab.—Neuse River, six miles from Raleigh, N. C. Prof. Emmons.

Descriptions of a New Helix and Two New Planorbes.

BY ISAAC LEA.

Helix Clarkii.—Testâ supernè rotundatâ, infernè plano-convexâ, regulariter striatâ, brunneo-corneâ, imperforatâ, unodentatâ: anfractibus septenis, obliquè striatâ; aperturâ lunatâ, subdilatâ; labro albido, reflexo, infernè calloso; columellâ in medio uno-dentatâ, ad basim impressâ.

Hab—Tuskee Cove, Cherokee County, North Carolina. Prof. D. Christy, Hamilton, Ohio.

Planorbis Wheatleyi.—Testâ parvâ, tenubroso-corneâ, planulatâ, obsoletè striatâ, bicarinatâ, supernè depressâ, infernè latè et profunditè umbilicatâ; anfractibus quinis, supernè obtusè carinatâ, infernè acutè carinatâ; aperturâ albidâ, crassâ et valdè constrictâ, intus sexdentatâ.

Hab.—Cotoma Creek, Montgomery County, Alab. C. M. Wheatley.

Planorbis Newberryi.—Testâ pallido-corneâ, depresso-turritâ, minutissimè striatâ, supernè et infernè acuto-carinatâ, latè et profunditè umbilicatâ; anfractibus quinis, planulatis; aperturà magnâ, pallido corneâ, subtriangulari.

Hab.—Klamath Lake and Canoe Creek, California. J. S. Newberry, M. D.

Descriptions of New Organic Remains collected in Nebraska Territory in the year 1857, by Dr. F. V. Hayden, Geologist to the Exploring Expedition under the command of Lieut. G. K. Warren, Top. Engr. U. S Army, together with some remarks on the Geology of the Black Hills and portions of the surrounding Country.*

BY F. B. MEEK AND F. V. HAYDEN.

After leaving the great area of comparatively low country composed of nearly horizontal Tertiary and Cretaceous formations, lying between the Missouri and the Black Hills, the geologist, on approaching the latter, soon begins to see in

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*Washington, D. C., March 1, 1858.

Capt. A. A. Humphreys, Top. Eng. in charge Off. Expl'n and Surveys.

Sir: The accompanying paper, by Messrs. F. B. Meek and F. V. Hayden, descriptive of New Organic Remains discovered by the exploration in Nebraska, organized by the War Department and placed under my command in May last,

the disturbed condition of the strata over which he is passing, unmistakable evidences that the hills looming up before him are not merely elevations left by the denudation of the surrounding country, but monuments of the former action here of those powerful subterranean forces which have played so important a part in modifying the earth's physical features.

First, in passing from the undisturbed overlying Miocene formation, we come directly upon No. 5, or the upper member of the Cretaceous series of the northwest, as subdivided in the published sections of the Nebraska formations. Then in regular succession Nos. 4, 3, 2, and 1, are passed over, all dipping sometimes at a high angle away from the Black Hills.* Beyond, and coming up from beneath No. 1, an older series of very similar strata, containing many organic remains, which we regard as Jurassic types, is passed over, as we ascend the hills. Then we have some fine red gypsum bearing deposites, separated by a bed of limestone containing a few fossils like Coal measure forms.

Next comes a group of well-marked Carboniferous formations, which repose upon a reddish and grayish sandstone of the same age as the Potsdam sandstone of the New York system,—all of which were often seen highly inclined, and apparently conformable. The Potsdam, in its turn, was met with, some-

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with remarks in relation to the Geology of the Black Hills, has been prepared for the purpose of being read at the next meeting of the Academy of Natural Sciences in Philadelphia, and I therefore, beg leave to ask the authority of the Department thus to dispose of it.

The region embraced by these Black Hills lies mainly between the north and south forks of the Shyenne River, and north-west of the well-known Mauvaises Terres of White River. Everything relating to it has hitherto been most imperfectly understood. Situated remote from the great lines of travel to the Pacific, and inhabited by brave and numerous warriors of the Dakota nation, determined to resist the encroachments or intrusions of white men, it has remained an unknown land, especially to scientific men, whose pursuits are viewed by the Indians with superstitious apprehension. Even the trappers and traders have generally avoided this dangerous locality, and hence the most erroneous ideas have been entertained of the position, direction, extent, and formation of these so-called Hills.

Our exploration of the past year has, however, in a great measure settled these points. We now know them to be a detached portion of the great upheaved mountain mass occupying the western portion of the territory of the United States, and the most eastern part of it yet discovered. They form an assemblage of mountain elevations lying between the meridians of 103° 15, and 104° 45, west from Greenwich, and between the parallels of 43° 20 and 44° 45 north latitude, the general deviation of the upland being about N. 20° W. The highest peaks are elevated about 6700 feet above the level of the sea, and from 500 to 4500 feet above the surrounding country.

The geological discoveries which the exploration has made are of much value to science, and the announcement of a few of the most important ones is the object of the paper herewith submitted. Mr. Meek has co-operated with Dr. Hayden in elaborating the results from the materials collected, without any pecuniary recompense from the government, Dr. Hayden being the Geologist to the expedition. Very respectfully your ob't serv't,

G. K. WARREN, Lt. Top. Engrs.

The above letter, and accompanying paper, have been submitted to the Secretary of War. Their communication to the Academy of Natural Sciences is authorized.

A. A. HUMPHREYS,

March 1, 1851. Capt. Topl. Engrs. in charge of Office &c.

* We should state here that the Tertiary beds were also often seen in the form of outliers, reposing unconformably on several of the older rocks, even down to the Carboniferous, near the south base of the Black Hills.

times far up on the higher points of the mountain, resting unconformably upon the upturned edges of what appears to be a series of very ancient, highly metamorphosed sedimentary strata, standing vertical. Beyond and beneath the latter, the main body of the mountains seems to be made up of a coarse feldspathic granite, composed of large crystals of feldspar, with very small proportions of quartz and mica. This granite, and portions of the adjacent strata, were often seen traversed by various veins, dikes, and larger outbursts of basaltic and other eruptive rocks.

In order that our remarks may be more clearly understood, we give below a general vertical section of the rocks seen in the Black Hills and around their base, showing their order of succession, and approximate thickness. It is not, of course pretended that all these formations were seen lying in contact at any one locality; but they were often met with, under such circumstances, and holding such relations, as to leave little room to doubt that this is their true order of superposition.

General Section of the Geological Formations seen in and near the Black Hills (descending).

1*st.* Miocene beds consisting of whitish clays and sandstones of various thickness.

Cretaceous System.

No. 5. Of the Nebraska general section, with its usual characters and fossils—150 ft.

No. 4. Presenting its usual characters and containing its characteristic fossils,—150 feet.

No. 3. Usual fossils and composition,—150 to 200 ft.

No. 2. Usual lithological characters and fossils, with some new forms,—200 to 250 ft.

No. 1. Upper part yellowish and reddish sandstone, sometimes in heavy beds, passing down into alternations of yellowish, gray, bluish, and reddish laminated shale, with seams and layers of dark carbonaceous matter, or impure lignite; beneath which there is a heavy bed of compact yellowish and reddish sandstone, with indistinct vegetable remains, and much fossil wood,—above beds variable at different places,—300 to 400 ft.

Then come alternations of light gray argillaceous grit, and rather soft sandstone, containing *Ammonites Henryi*, n. s. p., and a small oyster; also in bluish gray compact argillo-calcareous masses *Unio nucalis* n. s. p , and a small *Planorbis*, with other small univalves like *Paludina*.

Jurassic System.

A.—Layers of argillo-calcareous, somewhat gritty mass, containing *Belemnites densus*, n. s. p., *Ammonites cordiformis*, n. s. p., *Avicula* (*Monotis*) *tenuicostata*, n. s. p., *Arca* (*Cucullæa*) *inornata*, n. s. p.; passing down into a 6 or 8 foot bed light gray, or yellowish sandstone, with ripple marks and trails of marine worms, 50 to 80 ft.

B.—Light red argillo-calcareous gritty bed, with greenish seams, and nodules (sometimes wanting,)—30 to 40 ft.

C.—Soft gray and dark brownish sandstone, passing down into about 8 feet of laminated shale of various colors, below which there is a 6 foot bed of sandstone similar to that above, containing *Avicula tenuicostata*, and trails of marine worms. Then comes 30 to 40 feet of bluish, or ash-colored argillaceous shale, with great numbers of *Lingula brevirostra*, n. s. p., and *Serpula*. Next we have a light-gray calcareous grit, containing columns of *Pentacrinus asteriscus*, n. s. p., *Avicula tenuicostata*, *Serpula*, &c., the more compact and calcareous portions often perforated by *Pholas?* The latter bed passes down into a light-yellowish gray sandstone, splitting into thin layers, and containing imperfect casts of *Mytilus* (*Modiola*), *Pecten*, *Trigonia*, and other bivalves, in considerable numbers. Whole 60 to 100 ft.

Carboniferous System.

D.—Brick-red, incoherent, argillo-calcareous, very fine slightly gritty material, containing great quantities of gypsum in the form of seams, layers, and irregular beds,—100 to 150 ft.

E.—Bluish and reddish gray, very hard gritty limestone, in which were found a smooth *spirifer*-like *S. lineatus*, two or three species small *Pleurotomaria*, two species *Macrocheilus* and one or two species of *Bellerophon.* This bed is variable in thickness,—10 to 50 feet.

F.—Brick-red material, very similar to the bed D, excepting that it contains much less gypsum; passing down into a very hard compact concretionary sandstone,—250 to 300 ft.

G.—Hard, more or less gritty, yellowish and whitish limestone, containing *Productus*, *Spirifer*, *Euomphalus*, &c. &c., passing down into a light-yellow calcareous grit; altogether 50 ft.

H.—Very hard reddish-gray limestone, containing *Syringopora*, *Productus*, *Terebratula*, &c. In the middle of this bed there is an 8 foot layer of very hard compact bluish limestone containing many crinoid remains, whole 50 ft.

Oldest Silurian.

I.—Potsdam sandstone, containing *Lingula*, *Obolus?* and fragments of *Trilobites*,—30 to 50 ft.

J.—Highly metamorphosed strata, standing vertical.

K.—Coarse feldspathic granite, forming mountain masses.

The upper beds of the foregoing section, as seen along the Missouri, and in other portions of Nebraska, having been described on former occasions, and presenting few important new features, in the region of the Black Hills, we pass. for the present, at once to the consideration of those below, beginning with No. 2. This formation, it will be observed, augments greatly in volume towards the west, its thickness along the Missouri, above the mouth of Big Sioux River. having been generally estimated at about ninety feet, while here, near the Black Hills, it attains a thickness of two hundred feet. As it appears to be entirely wanting on the Missouri, near Judith River above Fort Union, and is found to diminish rapidly as we ascend the Big Sioux from the Missouri; while there are many facts pointing to the conclusion that it is one of the main fossil bearing beds of the Cretaceous series in Texas and New Mexico, we may reasonably infer that the sediment of which it is composed came originally from some source far to the southwest.

Lithologically this formation presents much the same characters near the Black Hills as along the Missouri, being composed of dark gray laminated clays. Several of its characteristic fossils were also found near the S. E. base of the Black Hills amongst which we recognise *Ammonites percarinatus* (Hall and Meek), of much larger size than those usually obtained along the Missouri, and numerous specimens of a *Cytherea*, perhaps identical with *C. tenuis* (Hall and Meek). Some interesting new forms were likewise found associated with the foregoing, amongst which there is a large *Ammonite*, having septa somewhat like those of *A. placenta.* but rounded on the dorsum; and a large strongly costated *Ammonite*, with very prominent nodes along the dorso-lateral margins, apparently very similar to a species described by Drs. Evans and Shumard under the name of *A. Galpinanus;* also a new species of *Scaphites*, closely related in the structure of its septa to *S. hippocrepis* of Dr. Kay.

It will be remembered, we have in all our published papers, when speaking of that portion of the Nebraska section composing No. 1, expressed doubts respecting its age. We placed it provisionally as the basis formation of the Cretaceous series, but at the same time stated it was " not positively known to belong to the Cretaceous system." In our last paper on the Nebraska formations. and their parallelism with those of the States, and the far southwest, communicated to the Academy in May, 1857, after having given all the facts in our possession bearing on this point, we stated that " although the weight of evidence thus far favors the conclusion that this lower series (No. 1) is of the age of the Lower Green sand, or Neocomian of the old word, we yet want positive evidence that portions of it may not be older than any part of the Cretaceous system."

Although we have little direct additional evidence at this time in regard to the age of this series, as we have always understood it, we now know that from beneath its lower beds, around the base of the Black Hills, there rises a series of very similar strata, as may be seen by the foregoing section, separated from its base by no well-marked line of demarkation, and containing many fossils closely similar to those considered characteristic of the Jurassic system of the old world. At the same time we have failed to recognize amongst these fossils any forms peculiar to the Cretaceous epoch, or even very nearly analogous to species common in rocks of that age.

The formations above alluded to as containing Jurassic types of fossils, are marked in the foregoing sections A, B, and C inclusive. But as before stated, these beds often pass so gradually, in their lithological characters, into No. 1 above, and so few fossils have been found near the junction, that we confess we have but a vague and indefinite idea in regard to the particular horizon at which the line should be drawn between them. Indeed, the general aspect of No. 1, and that of the formations below, are so very similar, and they are all so unlike the beds above, that if we were to classify them by their lithological characters alone, we should be inclined to view No. 1, and formations A, B, and C as forming one natural group, or at least to think that portions of No. 1, as we now understand it, should be classed with the series below. This view also appears to be the more reasonable when we take into consideration the great thickness of No. 1 in the vicinity of the Black Hills, and the fact that the beds A, B, and C contain a group of fossils apparently more nearly related to lower than upper Jurassic forms.

Inasmuch, however, as numerous leaves beyond a doubt belonging to dicotyledonous trees, closely analogous to the oaks, willows, and other existing forest trees, are known to occur in No. 1 along the Missouri, near the Big Sioux, and in northeastern Kansas,* and we have a *Baculite* from similar beds, apparently of the same age, near the mouth of Judith River, on the upper Missouri,—while we also learn from the letters and notes of our deceased friend, Mr. Henry Pratten, that he saw a species of *Baculite* in formations presenting the same characters, and seeming to occupy the same position, along the Platte above Fort Laramie, we think we hazard little in viewing at least a considerable portion of No. 1 as belonging to the Cretaceous system.

Another fact favoring the opinion that No. 1, even down as low as we have provisionally carried it in the Black Hills section, probably belongs to the lower Cretaceous, is the occurrence at its base of a bed containing *Ammonites* and *Ostrea*, along with *Unio*, *Planorbis*, and *Paludina ;* an association of fossils which, in that position, carries the mind rather to the Wealden than to older formations.

The occurrence of these forms at this horizon, also leads us to suspect that a considerable portion of the estuary beds at the mouth of Judith River, above Fort Union, in regard to the age of which we have been so much puzzled, may be, as first suggested by Dr. Leidy, a representative of the Wealden, and as we were then inclined to suppose, belong to our No. 1.

The close similarity between the lithological characters of these deposits, and those of some of the Tertiary formations of the north-west, and the estuary character of their fossils, together with the analogy of many of the species of mollusca found in one of the upper beds, (which may be an outlier of Tertiary resting on older formations), taken in connection with the fact that amongst the fossils collected from one of the middle beds (see section, page 124, vol. viii. Proceedings, 1857,) there were some fragments of a *Trionyx*, regarded by Dr. Leidy as identical with a species occurring in well-marked Tertiary deposits near Long

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* We are indebted to Maj. Hawn for our knowledge of the occurrence of these leaves in No. 1, as seen in Kansas.

Lake, below Fort Clark, led us subsequently to think the whole of these estuary beds, near the Judith, might possibly be only an outlier of Tertiary reposing upon deposits of the age of our No. 1. At the same time, in consequence of the occurrence in them of remains regarded by Dr. Leidy as analogous to *Lepidotus*, *Iguanodon*, and *Megalosaurus*, we stated that "in the midst of evidence of such a conflicting nature, it is unsafe to express any very positive opinion respecting the age of these formations."

Since we know that there is a similar group of beds at the base of No. 1, as we now understand it, near the Black Hills, containing a mingling of freshwater and marine fossils, although we are not sure any of them are specifically identical with those found near the Judith, we are inclined to think our first views in regard to these Judith River formations will prove to be correct, or in other words, the beds from which the saurian remains, described by Dr. Leidy, were obtained, will yet prove to be a part of the series we include in No. 1 of the Black Hills section. This view receives additional support, too, from the fact that the Judith River freshwater or estuary formations were often seen much upheaved and distorted, while around the Black Hills the Tertiary deposits appear to lie undisturbed upon the upheaved older rocks, in such a manner as to indicate that the last period of disturbance amongst the strata of this region occured after the close of the Cretaceous epoch, but previous to the deposition of the Tertiary.

The evidence pointing to the conclusion that formations A, B, and C of the foregoing section should be regarded as probably Jurassic, is, first, the affinities of their organic remains; and secondly, their stratigraphical position. It is true we do not pretend to have recognized in these deposits any genera *peculiar* to the Jura; but at the same time we have failed to identify amongst these fossils any species belonging to genera limited in their range to the Cretaceous system; while in their specific relations, so far as we have been able to make comparisons, they are nearly all much more closely allied to Jurassic than Cretaceous forms, if not indeed actually identical with the former in some cases. This will, perhaps, be better understood by the following comparisons of some of the species described in this paper, from these formations:—

1*st*. *Pentacrinus asteriscus*, n. s. p., from near the lower part of formation C, is so nearly like the Liassic *P. scalaris*, Goldfuss, that it is with some hesitation we have regarded it as new.

2*d*. *Avicula (Monotis) tenuicostata*, n. s. p., ranging from the lower part of the bed A to near the base of bed C, is very closely related to *M. substriata* of Minster, from the Lias.

3*d*. *Arca (Cucullæa) inornata*, n. s. p., from the lower part of bed A, is very similar to *C. Munsteri (Zeiten)*, also from the Lias.

4*th*. *Panopæa (Myacites) subelliptica*, n. s. p., from the bed C, is similar to the Liassic forms *M. Liassensis* and *M. Alduininus* of Quenstedt.

5*th*. *Ammonites cordiformis*, n. s. p., from bed A, is of the same type as the Oolitic species *A. cordatus* (Sowerby).

6*th*. *Belmnites densus*, n. s. p., from bed A, is scarcely distinguishable from the Oolitic species *B. eccentricus*, Blinville, if indeed it is really distinct.

In addition to the above, there are in the collection from the beds A, B, and C, other species we have not yet had time to describe, which closely resemble Liassic and Oolitic forms. These facts when viewed in connection with the stratigraphical position of these deposits, below what appear to be lower Cretaceous formations, and as above stated, so far as we yet know, the absence in them of well-marked Cretaceous types, are, we think, sufficient reasous for supposing they probably represent the Jurassic system.*

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* On a former occasion we expressed the opinion that Mr. Marcou was mistaken in regard to the existence of Jurassic rocks in the region of the Black Hills. This opinion was based upon the fact that one of us had traversed the belt of country he intended to color, east of these hills, as Jurassic, and found it occupied by Tertiary and Cretaceous formations. We also knew his map of this region had been mainly colored theoretically.

It is, perhaps, scarcely necessary for us to remark that the presence of *Ammonites* and *Belemnites*, in the rocks above alluded to, aside from the other organic remains, is alone satisfactory evidence that they do not belong to the Triassic epoch. It is true the bed C is not known to contain either *Belemnites* or *Ammonites*, but so many of the same forms associated with these fossils in the beds above, range down into the bed C, that unless it be the lowest stratum of yellowish gray sandstone at its base, there appears to be little reason for suspecting that it may belong to another system of rocks. In regard to this lowest stratum of formation C, we would state that the fossils contained in it are casts in a bad state of preservation, but as near as we have been able to determine, some of them appear to belong to types occurring in the beds above; we, therefore, for the present, place it provisionally as a part of the group composing formation C; but it is possible future investigations may bring to light facts that may prove it to belong to an older series, though it evidently is not Carboniferous, nor Permian.

Carboniferous Rocks of the Black Hills.

As may be seen by consulting the foregoing general section of the formations seen in and around the Black Hills, the rocks we regard as of Jurassic age, repose in that region upon a group of deposits, the larger portion, at least, of which clearly belong to the Carboniferous epoch.

We would, however, just here remark before entering upon the discussion of the Carboniferous formations of the Black Hills, that near the south-eastern base of these hills some loose masses of a cherty rock were seen, on more than one occasion, under circumstances indicating that the stratum from which they were derived holds a position between the base of the bed C and the bed D of the section. Yet as these cherty masses were no where actually seen in place, we have not given them a position in the Black Hills' section, though there can scarcely be a doubt that they belong to it. The fossils they contain, or at any rate several of them, are identical with species occurring in a formation in north-eastern Kansas, now known to be of Permian age.

The first formation in the descending order of the foregoing section we are inclined to place, (at least provisionally) in the Carboniferous system, is the bed D, which is composed of a brick-red fine silicious or argillaceous, slightly gritty material, effervescing very feebly in acids. Although from a hundred to one hundred and fifty feet in thickness, no vestiges of any kind of organic remains were seen in any part of this bed; but it was always found to be characterized by large quantities of gypsum, in the form of seams, layers, and large beds or irregular masses.

Beneath the foregoing bed we have a bluish and reddish gray, somewhat gritty limestone (E of the section), varying from 10 to 50 feet in thickness, and containing fossils, resembling coal measure forms. The collections from this rock consist of a small smooth *spirifer*, broader and more compressed than *S. lineatus*, but otherwise somewhat similar, two or three species of *Macrocheilus*, two small species of *Pleurotomaria*, and one or two species of *Bellerophon*, all in a rather bad state of preservation, but showing very satisfactorily their generic characters.

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and was necessarily based upon very erroneous views in regard to its topography. In addition to this, we had found the immense area represented by him as New Red Sandstone, in the upper Missouri country, almost entirely made up of Tertiary and Cretaceous deposits; while not a single Jurassic or Triassic fossil had ever been found throughout the whole country.

Since the position of the Black Hills has been determined by Lieut. Warren, we now know the area occupied by the Jurassic belt Mr. Marcou intended to place *east* of these hills, actually lies rather on the west of their middle portion, and does probably cover some surface occupied by the formations we regarded as Jurassic.

By these remarks we do not wish to be understood as intimating that a geologist is responsible for errors into which he may be led by incorrect topographical maps; nor do we wish to withhold from Mr. Marcou the credit justly due him for having first suggested the existence of Jurassic rocks in this region.

Next in the descending order, we have formation F, which is two hundred and fifty to three hundred feet in thickness, and very similar, towards the upper part, to the red bed D in its composition, excepting that it contains less gypsum; below, it passes into a very hard compact gray sandstone, the whole apparently destitute of fossils.

It will, perhaps, be remembered we mentioned in one of our former papers the existence of some facts which we thought point to the conclusion that the great gypsum deposits of the south-west, might be on a parallel with No. 1, or the lower part of No. 2 of our Nebraska section. From the great similarity of these red formations near the Black Hills, to the red gypsum bearing deposits described by Mr. Marcou and others, in Texas, Arkansas, and New Mexico, we are now inclined to the opinion that they all hold the same position, and are of course much older than our No. 1.

The entire absence, so far as we yet know, of organic remains in these red formations in the region of the Black Hills, as well as in the south-west, shows that during their deposition the physical conditions in the waters where they were deposited, must have been unfavorable to the existence of animal life.

That the lower bed F, of the foregoing section, is of Carboniferous age, is very probable, coming in as it does immediately above a well-marked Carboniferous formation, and below a limestone containing fossils closely similar to well-known coal measure forms, two of which belong to genera (*Bellerophon* and *Macrocheilus*), not known, we believe, to range above the Carboniferous system.

It is not, however, so easy to determine the age of the upper red bed D. From its stratigraphical position, as well as lithological characters, it might with almost as much propriety be referred to the Permian or Triassic systems, as to the Carboniferous. Yet as it appears to have been deposited during a repetition of the same physical conditions that prevailed during the deposition of the bed F, we think it is perhaps safer to refer it provisionally, in the absence of palæontological evidence, to the Carboniferous system, though it is possible both these red beds and the intervening limestone may prove to be Permian.

Immediately below the foregoing formations there is a rather fine grained somewhat gritty whitish subcrystalline limestone (G of the section), containing in great numbers a species of *Spirifer*, perhaps new, and resembling more nearly forms common in the lower Carboniferous series of the west than those of the coal measures; along with this a fragment of another *Spirifer* was found, having fasciculate bifurcating costæ, like *S. Meusebachanus* (Rœmer), a common coal measure fossil; also two species of *Productus*, one of which is probably identical with *P. semireticulatus*, and an other similar, but smaller species, with apparently a less deeply marked sinus in the larger valve, and a shorter hinge. This bed passes gradually down into a yellowish gritty somewhat friable limestone, in which was found a *Spirifer* having a high area like *S. cuspidatus;* and a large *Euomphalus*, apparently identical with a species common in the Encrinital or Burlington limestone of the lower Carboniferous series in the west,—the two rocks are fifty feet in thickness.

The succeeding formation is a hard yellowish gritty limestone often tinged with red (H of section), in which were found specimens of a small smooth *Terebratula*, a small deeply sinuate *Productus*, and a *Syringopora?* having small, straight, very regularly disposed tubes, about ·06 inch in diameter, and separated by spaces about ·09 inch across. In the middle of this formation, which is usually forty feet in thickness, there is often seen an 8 foot layer of bluish rather compact argillaceous limestone, containing a smooth *Terebratula* resembling *T. subtileta* (Hall), but perhaps distinct, and a *Productus* like *P. cora*, in the fineness of its striæ.

The fossils in the collection from these lower limestones (G and H) are unfortunately almost all in a very bad state of preservation; so that it is nearly impossible to determine with any degree of certainty their specific characters. As near as can be ascertained, however, the majority of them appear to resemble more nearly lower than upper Carboniferous forms, though some of them certainly are like coal measure species.

The color, texture, and composition of the beds are such as to carry the mind at once to the lower Carboniferous series, and quite unlike those of any rock known in the western coal measures.

Lower Silurian.

Potsdam Sandstone.

At several places in the Black Hills, the oldest Carboniferous bed of that region (H) was seen reposing, to all appearances conformably, upon a bed thirty to fifty feet in thickness of reddish and grayish sandstone, composed of angular grains of quartz, cemented by silicious, and sometimes small portions of calcareous matter. The fossils obtained from this rock were *Lingula antigua*, (Hall), and great numbers of a small shell very similar to *L. prima* (Conrad), but from its thickness and structure probably an *Obolus;* also a shell nearly related to *O. appolinus*, as figured by Murchison and De Vernueil, in their work on the geology of Russia, but perhaps new, and fragments of a Trilobite belonging apparently to one of the forms figured by Dr. Owen from the lower sandstones of Minnesota.

The above mentioned fossils, as will be at once understood by the Palæontologist, clearly prove this lower sandstone (I) to belong to the oldest portion of the Silurian system, or in other words, to the Potsdam sandstone of the New York series. The identification of this rock, at this remote point in the far west, we regard as a matter of peculiar interest, proving, as it does, the extension of that formation several hundred miles further westward than it has hitherto been known to occur in this country.*

Metamorphic and Igneous Rocks.

At almost every place where the base of the Potsdam sandstone was seen in the Black Hills, it was found to repose upon what appears to be upturned edges of an ancient series of sedimentary rocks. These older rocks present the appearance of having their strata thrown into a vertical or highly inclined condition, while the Potsdam, although much disturbed, rests unconformably upon them.

Further in towards the interior of the mountain, and beneath the metamorphic rocks, as already stated, the main body of the Black Hills is composed chiefly of a coarse feldspathic granite and other igneous rocks.

DESCRIPTIONS OF NEW FOSSILS.*

Pentacrinus asteriscus.

Our knowledge of this crinoid is entirely derived from detached pieces of its column, and other parts, as seen imbedded in a sandy matrix cemented by calcareous matter. These segments or joints of the column may be characterized as rather thin, small, and very symmetrical pentagonal, star-shaped bodies, the rays of which are usually longer than wide, and rather acutely angular at their extremities. Through the centre of each joint there is a very small circular perforation, from which five regular lance-oval, petaloid areas radiate, one to the extremity of each of the angles; the areas being bounded by rather narrow, slightly elevated transversely crenulate margins.

The above description applies more particularly to the largest sized specimens, measuring about ·18 inch across from point to point of the opposite angles. Associated with these there are other much smaller joints, varying from ·05 to ·10 inch in diameter. These have proportionably shorter and broader rays, or angles, which, however, appear never to be rounded at the extremities. It is possible these smaller joints may belong to another species, though we incline to the opinion that they are only the joints of smaller individuals of the species here indicated.

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* **Figures and more extended descriptions to appear in Lieut. Warren's final report.**

The star-like surfaces of the column joints above described, present some varieties of form, but usually resemble so closely those of *S. scalaris*, Goldf., that we are in some doubt about the propriety of considering our fossil a distinct species. These joints are all much smaller than those figured by Goldfuss, and appear never to have had the angles so short and rounded as some of the examples given by that author and Quenstedt, of *P. scalaris*.

Locality and position.—South and south-west base Black Hills; Stone Butte. Lower part of bed C of the accompanying section.

LINGULA BREVIROSTRIS.

Shell oblong elliptical, thin; lateral margins slightly convex, nearly parallel, sometimes converging a little towards the beaks in young individuals; front subtruncate; cardinal edge sloping to the beaks at an angle of about one hundred and thirty degrees; beaks obtuse, scarcely projecting beyond the cardinal margin; valves nearly equal, convex along the middle, compressed near the margins and in front. Surface polished, and marked by fine rather obscure concentric striæ; on the surfaces of the inner laminæ a few very obscure radiating, or longitudinal lines are sometimes seen along the middle of the valves, near the front. Length ·54 inch; breadth ·35 inch; thickness (depth of the two valves) ·16 inch.

Locality and position.—Western and south-western base Black Hills, towards lower part of bed C of foregoing section.

INOCERAMUS UMBONATUS.

We only know this species from an internal cast of a left valve, with portions of the shell adhering near the beak and hinge. This valve is remarkably gibbous, and the beak, which is a little oblique and near the anterior side, is much produced, elevated and involuted, so as to give the valve the appearance of some of the Palæozoic univalves usually referred to the genus *Capulus*. The aperture of this valve is subcircular, being straighter on the hinge side than elsewhere. The portion of the shell remaining near the hinge is very thick, and composed of an inner laminated layer, and an external coarsely fibrous portion, the latter being much thicker than the other. We know nothing of the surface markings, beyond the fact that obscure concentric undulations are visible on the cast.

The remarkable form of this valve indicates that the other must have been comparatively much less gibbous, or, perhaps, bore the relations to this, of an operculum to a univalve shell, as in *I. involutus* of Sowerby. It is the first species of this type discovered in American formations, so far as we know. Height 3.10 inches; length 2.38 inches.

Locality and position.—This specimen was obtained from near Fort Benton on the upper Missouri; but as it was found by a person unacquainted with geology, at a locality not yet visited by any person familiar with the formations of the country, its position is doubtful. The composition of the matrix, however, as well as the thickness and structure of the shell, lead us to think it holds a position in No. 4 of the general section; all the north-western species yet known from formations below No. 3 being comparatively thin and entirely fibrous.

AVICULA (MONOTIS) TENUICOSTATA.

Shell suborbicular, or slightly oval, a little oblique, usually higher than long; valves nearly equally convex; anterior side subtruncate, rounding rather abruptly into the hinge above, forming a broad oblique curve below; basal and postero-basal margins rounded; upper posterior margin sloping obliquely forward, but often curving gently outwards just below its junction with the extremity of the hinge line, so as to make the angle of the small, more or less compressed posterior wing not more than eighty or ninety degrees; hinge line less than the greatest length of the shell. Beaks scarcely oblique, located nearer the anterior than the posterior side; that of the left or larger valve more prominent than the other, and extending a little above the hinge; beak of the smaller valve more compressed, and scarcely distinct from the hinge margin. Surface marked by small, obscure, slightly elevated, radiating lines or costæ, which are less than the spaces between, and crossed by fine, nearly obsolete lines of growth, usually most distinct near the upper anterior margin. Length ·60 inch; height ·64 inch; breadth ·26 inch.

The sinus for the passage of the pedal muscle in the anterior margin of the smaller valve is rather deep, narrow, and connected with a deeply impressed narrow groove, which extends on the outside of the valve nearly parallel to the hinge; quite to the beak.

The surface markings are usually rather obscure on both valves, and often nearly obsolete on the smaller one. Young individuals are more nearly orbicular than mature specimens.

A closely allied representative of the Liassic species *Monotis substriata* Münst. (see Leonh. Br. t. ii, p. 8, 406.)

Locality and position.—Southwestern and eastern sides of Black Hills, ranges from upper part bed A, low down in bed C, but not in to B.

MYTILUS PERTENUIS.

Shell small, extremely thin and fragile, slightly arcuate; valves convex along the middle from near the beaks, obliquely backwards and downwards to the lower part of the posterior end; extremities narrowly rounded, the anal end being a little broader than the other, and having its most prominent part below the middle. Base somewhat arched behind the middle, more prominent and curving very gradually upwards toward the front; dorsum carinate from a little behind the beaks posteriorly, its outline forming a broad, sloping curve. Hinge nearly straight, rather short, rounding gradually into the dorsal edge behind. Beaks small, rather obtuse, subangular above, and located at the anterior end, scarcely projecting beyond the hinge and anterior margin. Surface marked by fine, rather obscure lines of growth.

Locality and position.—West base of Black Hills, bed C, of the accompanying section.

ARCA (CUCULLÆA) INORNATA.

Shell oblong-oval, subrhombic, rather gibbous in the umbonial region; anterior side rounded up from below, so as to meet the hinge at an angle of about ninety degrees; posterior side a little broader than the other, obliquely truncate above, somewhat narrowly rounded below; base nearly straight along the middle, but not exactly parallel to the hinge, rounding up more gradually towards the front than behind. Beaks rising somewhat above the hinge, rather pointed, incurved and very slightly oblique, located a little in advance of the middle; posterior umbonial slopes subangular. Hinge rather long, but not equalling the greatest length of the shell; posterior teeth two or three in each valve, linear and elongate parallel to the hinge margin; anterior teeth much shorter and oblique; ligament area not very broad. Surface apparently smooth. Length 75 inch; height ·45; breadth ·46 inch.

Has the teeth of the hinge arranged like those of *Cucullæa*, or approaching those of *Macrodon*, but the posterior muscular impression seems not to be raised upon a projecting lamina as in those genera.

Locality and position.—South western base of Black Hills; also around Bear Butte, on east side of Black Hills, bed A, of the foregoing section.

UNIO NUCALIS.

Shell oval, moderately gibbous; extremities rather narrowly rounded, the most projecting part of the posterior end being below the middle, and that of the anterior extremity above it; base semioval, often quite prominent in the middle; beaks a little depressed, located about half way between the centre and the anterior end; umbonial region rather gibbous, and rising above the hinge, subangular on the posterior slopes. Surface marked by fine lines of growth, and more or less distinct concentric wrinkles; the latter becoming quite small and very regular on the beaks. Traces of extremely small regular radiating wrinkles are also sometimes seen between the obscure angle on the back part of the umbones, and the hinge. Length 1·85 inches; height 1·34 inches; breadth 1 inch.

We were at first in much doubt about referring this shell to the genus *Unio*, because it is associated with a small oyster and *Ammonites Henryi* of this paper. The hinge, however, as far as we have been able to make out its characters, is like that of the genus *Unio*, and entirely different from *Cardinia*, and other forms usually resembling *Unio*. In the left valve, (we have not seen the hinge of the right valve,) it is moderately thick, somewhat arched, and provided with two posterior lateral teeth, which are elongated parallel to the cardinal edge, and separated by a groove apparently for the reception of a tooth in the other valve. The cardinal tooth, which is placed nearly under the beak, is rather irregular, somewhat flattened, and a little corrugated on the edge.

In addition to the foregoing characters, we are led to think this must be a true *Unio*, from finding in the same matrix several specimens of a small *Planorbis* and a fragment of *Paludina*.

Locality and position.—Southwest base of Black Hills, in lower part of No. 1.

CORBULA INORNATA.

Shell small, trigonal, very gibbous; anterior side more or less rounded; posterior extremity angular below, base semiovate, the most prominent part being towards the front; hinge sloping from the beaks, which are central; posterior umbonial slopes angular. Right valve more convex than the other, and having its beak more gibbous, elevated and incurved; but the margins of the two valves are equal, nearly or quite closed, and a little warped. Surface nearly smooth or only marked by very obscure lines of growth, and sometimes a few indistinct concentric wrinkles near the base. Length ·27 inch; breadth ·29; height of larger valve 23 inch, of smaller 20 inch.

We have not yet had an opportunity to see the interior of this shell, but owing to the fact that there is often seen on the posterior side of each valve, just within the posterior umbonial angle, a rather distinct groove curving down from the beaks, directly over the position of the raised internal lamina in our genus *Corbulamella*, we suspect this species may possibly be found to possess the internal characters of that genus.

Locality and position.—Long Lake, No. 5, of the general section.

PANOPÆA (MYACITES) SUBELLIPTICA.

Shell narrow, subelliptical, or subovate, moderately compressed, extremities narrowly rounded, the posterior end being more compressed than the other, and sometimes very faintly truncate on the oblique upper slope, both ends apparently nearly closed, or but slightly gaping. Base forming a very broad gentle curve, rounding up gradually towards the extremities; dorsal outline slightly concave in front and rear of the beaks, the anterior slope being more abrupt than the other. Umbonial region obscurely angular on the posterior side; beaks rather depressed, but rising above the hinge, approximate, and located in advance of the middle. Surface of cast marked by small, moderately distinct, irregular concentric wrinkles of growth. Muscular and pallial impressions unknown. Length 2·10 inches; height 1·10 inches; transverse breadth ·70 inch.

Locality and position.—Western and southwestern base Black Hills, low down in bed C of the accompanying section.

TEREDO GLOBOSA.

Shell globose, thin, rounded or subtruncate and gaping posteriorly; anterior hiatus large, and consisting of a rectangular notch extending from the base half way up towards the beaks, and back to the middle of the shell. Umbonial region gibbous; beaks placed near the anterior side, much incurved obliquely forward. Surface marked by rather distinct lines of growth, which, on the back part of the shell, curve down, parallel to the posterior border, until they approach a small indistinct ridge, or slightly elevated line, passing down from the umbones, when they curve abruptly upwards nearly parallel to the margin of the anterior hiatus, becoming at the same time much finer and more regular, as well as very finely and beautifully crenulate; on reaching a small, indistinct groove, which curves down obliquely from the beaks towards the corner of the anterior notch, these lines are abruptly deflected upon the anterior portion of the shell extending out over the notch.

The tubes are thin, subcylindrical, and sometimes nearly straight, but generally variously curved; and increase gradually from the smaller to the larger end. Length of shell ·23 inch; height and breadth of do. each ·22 inch. Diameter of one of the larger tubes .26 inch.

Locality and position.—Square Butte, near Fort Clark, upper part of No. 5 of the general section. Found in great numbers in large masses of fossil wood.

PHOLAS CUNEATA.

Shell small, very thin, cuneiform, most gibbous at the anterior end, which is truncate, and more or less gaping,—narrowing and much compressed posteriorly; anal extremity very narrowly rounded and gaping a little. Dorsal margin declining slightly from behind the beaks, with a very gentle convex curve towards the posterior end; basil margin nearly straight, or a little concave in outline. Beaks small, located at the anterior extremity, scarcely rising above the hinge, incurved and touching.

The surface is marked by small concentric wrinkles, which are much more distinct on the gibbous anterior half of the shell than behind, and crossed by two grooves, the anterior one of which is linear, but well defined (on the cast), and extends from the beaks downwards, and a little backwards, so as to reach the base in advance of the middle; the other groove is more shallow, broader, less distinctly defined, and extends from the back part of the beaks, obliquely backwards and downwards, just within the subangular posterior umbonial slopes.

There is also a small ridge or elevated line, on the anterior end of each valve, curving parallel to the concentric wrinkles, from the base about half way up towards the beaks, from which point it is deflected abruptly at right angles forward, so as to delineate exactly the form of the angular notch or hiatus of *Teredo* and *Xyophaga;* but the margin of the valve, (at any rate in adult shells) extends out beyond this line, so as to leave a comparatively small hiatus.

The posterior muscular impression is long, very narrow, and placed near the postero-dorsal edge; while the pallial line passes obliquely down near the middle of the valves, and appears to be provided with two sinuses, the upper one being very small, and lower of medium size. The space behind the pallial line is marked on the interior by extremely fine, obscure radiating striæ. Length ·37 inch; height ·18 inch; breadth ·16 inch.

Locality and position.—Long Lake, No. 5 general section.

ACTEON (SOLIDULA) ATTENNUTA.

Shell small, elongate; spire elevated; volutions (number unknown) depressed, or but slightly convex, separated by a shallow, but distinct suture. Surface ornamented by numerous small punctate striæ, usually less than the spaces between, and numbering about fourteen on the second turn; sometimes there is on the body whorl a much smaller stria between each two of the others; while near the base of this volution the striæ are stronger than above, and more distinctly punctate. Lip and columella unknown. Length about ·57 inch; breadth 17th inch; apical angle convex, divergence 18°.

As our specimen is not in a condition to show the collumella, we are left in some doubt respecting its generic relations, but its form and surface markings are similar to those of species usually referred to the genus *Acteon.*

Locality and position.—Yellow-stone river, formation No. 4 and 5 blended together.

HELICOCERAS? TORTUS.

Our specimen of this species is a fragment, consisting of one septate volution of the spire. This evidently belonged to a sinistral conical shell, composed (at any rate during a part of its growth) of rounded whorls, which are coiled in an ascending spiral, so far out of the same plane as to be disconnected by a free space equalling about one-third the diameter of each succeeding whorl below. The umbilical cavity left within, is, at its aperture, less than the diameter of the largest volution; while the whorls increase in size, so as nearly to double their diameter each turn. The surface is ornamented by two rows of rather low nodes, passing round the lower outer side (the apex of the spire being above) of the whorls,—and small, but distinct annular costæ, which often bifurcate at the nodes.

The siphuncle is very small, and in the specimen before us presents the remarkable peculiarity of gradually changing its position in passing from the smaller to the larger extremity of the fragment before us. That is to say,—at the smaller end of the specimen, it occupies exactly the middle of the dorsal, or outer side, but in passing round it gradually curves upwards, so that by the time it reaches the larger end, it comes out on the summit of the whorl. Consequently, if it goes on in this way, another turn of the spire would bring it on the inner or umbilical side,—a third on the underside, and the fourth again on the dorsal or outer side. It is also worthy of note that the lobes and saddles of the septa, and to some extent the nodes, followed the peculiar curve of the siphuncle, so that it would seem the whorls not only form an ascending spiral curve, but are, as it were, at the same time, twisted in such a manner as to change the relative positions of the dorsal and ventral sides.

The septa are provided with six lobes and six saddles, the larger of which are profoundly sinuous and variously branched. The dorsal lobe is comparatively small, and ornamented at the extremity by two nearly equal branches, each of which is subdivided into from three to five small divisions with sinuous margins; above this there is a small lateral branchlet on each side, the right hand one of which is bifid. The superior lateral lobe is considerably larger than the dorsal lobe, and deeply divided by its auxiliary saddle into two large unequal spreading branches, of which the one on the ventral side is somewhat longer than the other, and provided at the extremity by two nearly equal spreading bifid branchlets and several smaller digitations; the other principal division is less deeply divided at the extremity into two unequal parts, the terminal or longer of which is bifid: the margins of the main branches, as well as of the body of the lobe, are also provided with several subordinate divisions with sinuous edges. The inferior lateral lobe is somewhat smaller, but in other respects scarcely differs from the superior lateral lobe.

The dorsal saddle is nearly as large as the inferior lateral lobe, but less spreading above, and narrower, as well as more oblique at its base; while its extremity is profoundly divided, by its auxiliary lobe, into two subequal tripartite, deeply sinuous branches. The lateral saddle is very nearly of the same size and form as the dorsal lobe, but less oblique, and a little more deeply divided by its long auxiliary lobe.

The greater transverse diameter of our specimen is 2·43 inches ; do. of umbilicus, ·65 inch ; diameter of larger end of the whorl 1·04 inch ; do. of the smaller end ·74 inch ; diameter of the siphuncle at the larger extremity ·6 inch.

The peculiar twisted character of the volutions in this shell led us to suspect it may be found, when better specimens are obtained, to constitute a distinct genus from any Cephalapod hitherto described. For the present, however, we refer it provisionally to the genus to which it appears most nearly related.

Locality and position.—Great Bend of the Missouri, lower part of No. 4, general section.

TURRILITES (HELICOCERAS) COCHLEATUS.

Shell sinistral, very thin, and composed of rounded, nearly or quite contiguous whorls, which gradually increase in size from the smaller to the larger extremity; umbilicus slightly wider than the diameter of the largest whorl. Surface ornamented by numerous small rather irregular bifurcating, annular costæ, which first pass obliquely backwards and outwards from the umbilicus above, then curve so as to cross the dorsum obliquely downwards and forwards, but on reaching the lower side, they curve backwards again, in approaching the ventral side. There are also two rows of obscure, flattened, or depressed oval nodes, one of which passes round nearly exactly over the siphuncle, which occupies the middle of the outer side of the whorl, while the other is placed less than one-fifth of the circumference of the whorl lower down.

The septa are rather distant, and divided into six lobes and six saddles, which are a little unsymmetrical, in their subordinate details, but about of the same size and general form on opposite sides of the siphuncle. The dorsal lobe is small, and ornamented at the extremity, by four small branches, the two terminal of which are a little larger than the others, slightly dissimilar, and each provided with five or six unequal digitations ; the other two divisions are not exactly opposite, differ slightly in form, and are each armed with about from three to five or six unequal digitate points : above these principal terminal divisions, there are also along the body of the lobe a few small alternating lateral pinnules.

The superior lateral lobe is greatly larger than the dorsal lobe, and very deeply divided into two great, subequal, spreading branches, of which the one on the ventral side is a little larger than the other (especially on the side of the whorl below the siphuncle), and unequally subdivided into three bifid branchlets, the two terminal of which are much larger than the third, and each ornamented by several small unequal, projecting points, the other main branch is divided into two principal, bifid branchlets with many smaller sinuosities and digitations. The inferior lateral lobe is somewhat smaller than the superior, but in other respects very similar.

The dorsal saddle is small, very oblique, much contracted at its base, and divided above into two unequal variously subdivided, sinuous branches. The lateral saddle is not so oblique, but does not otherwise differ materially from the dorsal saddle.

Our specimen consists of a little more than half a volution, the greatest transverse diameter of which is 2·34 inches ; breadth of umbilicus ·75 inch. Diameter of the volution at larger end, which is a little oval, ·73 inch by ·64 inch ; do. of smaller end, which is very nearly circular, ·54 inch.

It is not easy to determine, from our specimen, whether this species is most nearly related to the genus *Turrilites* or *Helicoceras*. In the rounded and comparative slender form of its whorls, as well as the large size of its umbilicus, it is more like the latter genus ; while the fact that the volutions are nearly or quite in contact, as is shown by an impression left on the matrix, would seem to indicate that it must belong to the genus *Turrilites*. It is probable, however, these two types will be found to be connected by many intermediate gradations of form, when larger numbers of these *Cephalopods* are known.

Locality and position.—Great Bend of the Missouri, lower part of No. 4.

HELICOCERAS TENUICOSTATUS.

The fragment upon which we propose to found this species is slender, nearly cylindrical, and increases very gradually in size, from the smaller to the larger extremity. It makes a remarkably broad sinistral, ascending spiral curve, so as to leave the volutions disconnected, and form a large umbilical space, having a diameter about four times as broad as that of the largest whorl. The siphuncle is of medium size, and occupies a position above the middle of the outer side of the volutions.

The surface is ornamented by rather irregular moderately distinct annular costæ, which occasionally bifurcate, and pass nearly straight around the whorls On the outside of the volutions the costæ are stronger than within, and show. a disposition to swell out into obscure nodes. Length of fragment 1·64 inch; diameter at larger extremity ·49 inch ; do. of smaller end ·44 inch.

We have for a long time past had this specimen in our possession, but always supposed it identical with *Hamites Mortoni*, (Hall and Meek, Mem. Am. Acad. Arts and Sci. N. S. vol. 5, pl. iv. fig. 3 a. c.) which is probably a *Helicoceras*. After a more careful comparison, however, we find the following differences, which we think are of specific importance,—in the first place, the costæ of the shell now before us are less prominent, and encircle the volutions much less obliquely than those of *H. Mortoni*; while the siphuncle occupies a higher position in the dorsum, and the spiral coil of the shell was sinistral, while that of *H. Mortoni* is dextral. In addition to the foregoing, there are well marked differences in the details of the lobes and saddles of the septa, which cannot, however, be well explained without the use of figures.

Locality aud position.—Great Bend of the Missouri, lower part, No. 4.

TURRILITES ? UMBILICATUS.

We have of this species nearly an entire volution, a little more than half of which is septate, but not in a condition to show the form of the lobes. It is a sinistral shell, the rounded volutions of which are coiled in an ascending spiral, nearly or quite in contact, and increase gradually in size, from the smaller to the larger extremity. The umbilicus is a little less than the diameter of the largest volution; and the siphuncle occupies a position in the middle of the outer side of the whorls.

The surface is ornamented by rather distinct, annular bifurcating costæ, which, on the upper side of the whorls, curve first obliquely backwards and outwards from the umbilicus, then forwards and downwards, as they cross the dorsum, and on reaching the under side, curve inwards to the umbilicus. There are also two rows of more or less distinct nodes passing around the under outer side of the whorls, at which the costæ usually bifurcate.

Greatest transverse diameter across the volutions and umbilicus 3·20 inch; breadth of larger end of whorl 1·19 inch ; do. of smaller end 1·06 inch.

Not having seen the septa of this species, it is with some hesitation we have considered it distinct from *T. cochleatus* of this paper; though it differs from our specimen of that species in having less neatly rounded volutions, much stronger nodes and costæ, and proportionably a little smaller umbilicus; they may, however, be only varieties of the same species.

Locality and position.—Great Bend of the Missouri, lower part of No. 4 of general section.

ANCYLOCERAS (HAMITES) UNCUS.

We have only seen a fragment of this specie, consisting of the curved portion of the non-septate, or body part of the shell. It is compressed laterally, and makes a rather short curve in the same plane,—leaving between the two extremities, a free space equalling about half the greater diameter of the larger limb; both ends are then extended in the same direction, and, apparently, nearly parallel.

The surface is ornamented by strong, rather angular more or less oblique annular costæ, which occasionally bifurcate on the sides, and are much more prominent towards the dorsal, than the ventral side. There are, also, two rows of rather small nodes on each side of the dorsum, placed on the costæ; those nearest the dorsum being more prominent than the others, which merely consist of a slight swelling of the ribs.

Diameter across the curve 3·92 inches; greater diameter, transverse section of larger limb 1·73 inch; smaller diameter of do. 1·10 inch.

We are unable to determine from this fragment whether it is an *Ancyloceras* or a *Hamite*.

Locality and position.—South fork of Cheyenne River, near base of Black Hills. No. 4, of the general section.

AMMONITES CORDIFORMIS.

Shell, when young, rather compressed, but becoming much more convex with age; dorsum distinctly carinate, in small specimens, much more obtuse in the adult. Umbilicus one half to one third as broad as the outer whorl; proportionally smaller in large than small individuals; transverse section of the volutions distinctly cordate. Surface ornamented by numerous small costæ, which are largest near the umbilicus, where they sometimes (in the medium sized specimens) swell a little, so as to form obscure transversely elongated, subnodose prominences. A short distance beyond this, they bifurcate regularly, or are increased by the implantation of others between, to two or three times their number, at the umbilicus. As they approach the dorsum, they curve distinctly forward, and in passing over it, impart to the dorsal carina, especially in young specimens, a more or less distinctly serrated outline: on the outer volutions of large individuals, the costæ are almost entirely obsolete,

The septa, which are not very closely crowded, are divided into five lobes on each side, the first four of which are similar in their mode of branching to those of *A. cordatus* of Sowerby; but they are less deeply sinuous, and present other differences in their details. Greater diameter (of an imperfect specimen) 3·30 inches; transverse diameter of its outer whorl 1·90 inch: breadth of same from umbilicus to dorsum 1·64 inch. Breadth from umbilicus to dorsum of a portion of an outer volution of large individual 3·50 inches; transverse diameter of same, near the umbilicus 3·18 inches.

In many respect this shell is nearly related to the Liassic species *A. cordatus*, of Sowerby, of which it may be regarded as a representative. All our specimens are internal casts.

Locality and position. South west base of Black Hills, associated with the foregoing species.

AMMONITES HENRYI.

Shell convex lenticular; dorsum narrowly rounded, or subangular; inner volutions entirely hidden: umbilicus very small and deep: surface apparently without nodes or costæ.

Septa not very profoundly lobed, rather closely crowded, slightly unsymmetrical on opposite sides of the shell. Dorsal lobe divided into four principal branches, the two terminal of which are smaller than the others, and usually tridigitate at their extremities; while the two lateral divisions are bipartite, with more or less sharpely dentate extremities.

The superior lateral lobe is about the size of the dorsal lobe, and irregularly divided into four nearly equal branches, one of which, on the dorsal side, is separated from the others by a deeper and broader sinus, than those by which they are divided; while the other three branches form together a kind of large tripartite division: each of the four branches is provided at the extremity with from three to six sharp digitations. The next succeeding lobe is not more than one-fourth as large as the superior lateral lobe; it is, on one side of the shell, divided nearly to its base, into two equal branches; while the corresponding lobe on the other side, is narrower, and rather regularly divided into three short sharply digitate branches. The remaining lobes are very small, and simply digitate at their extremities. Greatest diameter 2·14 inches; transverse diameter 1·33 inches.

This species is remarkably distinct in its internal structure from all the *Ammonites* hitherto found in this country. We take pleasure in naming it in honor of the distinguished philosopher Prof. Joseph Henry, Secretary of the Smithsonian Institution.

Locality and position. Southwest part of Black Hills, lower bed of No. 1, general section of Nebraska formations, and of preceding section.

SCAPHITES LARVÆFORMIS.

Shell small, ovate, laterally compressed, rounded on the dorsum; body whorl cylindrical, first extended horizontally from the convoluted inner whorls, then curving upwards a little, after which it bends backwards upon itself, so as to bring the aperture almost in contact with the inner coil; but leaving a free space within the curve. Inner whorls mostly hidden, forming a small coil at one end of the shell, and so closely rolled up as to leave but a very small umbilical impression: aperture nearly circular. Surface ornamented by rather small costæ which pass round a little obliquely from the inner side of the whorls, to a point about halfway across the outsides, where they swell out into small obscure transversely elongated nodes, and then each branch into two or three smaller costæ, which pass very regularly over the dorsum.

The septa are moderately close, and provided with three lobes on each side, of which the superior lateral is the largest. The dorsal lobe is still larger, and provided with two small obscurely bilobate branches on each side. Greatest length .88 inch.; greatest height ·60 inch.; breadth of the body whorl ·32 inch.

This species is very closely allied in the structure of its septa to *S. hippocrepis*, DeKay, (*S. Cuvieri*, Morton, Synop. Org. Remains, pl. vii. fig. 1,) but differs in the details of its septa lobes, and the body whorl is proportionally much more slender, more cylindrical, and forms a larger curve; it also wants the outer row of round nodes.

Locality and position.—East base of the Black Hills, formation No. 2 of the general section.

BELEMNITES DENSUS.

Shell large and thick, subcylindrical, more or less compressed laterally, so as to give the cross section a slightly oval outline: lower portion tapering to a point, sometimes a little oblique, usually more compressed than any part above. often having a narrow obscure groove on the ventral side, and sometimes a very slight carina on the dorsal side, near the apex; the groove being more frequently present than the carina, and extending further up from the point: surface smooth.

Alveolus extending about half way down from the summit to the lower extremity, where it terminates nearly midway between the centre and the ventral side; from this point the apical line passes down, gradually approaching the ventral margin, but curving slightly so as not to intersect it before reaching the apex.

Phragmacone conical, very slightly curved, apical angle 20°; septa rather closely arranged, about twenty of them occurring in a section one inch in length, measuring ·72 inch in diameter at the larger end, and .35 inch at the smaller end; siphuncle unknown.

The best specimen we have seen, of the outer horny shell, measures 5 inches in length, and ·90 inches in diameter at the larger end; the alveolus measures about 2.39 inches in length, and .75 inch across the aperture. Some fragments, in the collection of other individuals, appear to have been at least one third larger than the specimen from which the above measurements were taken.

This species is closely allied to *B. excentricus*, Blv., and *B. panderianus* D'Orbigny, ofthe lower oolite, but appears to be distinct from both.

Locality and position. Southwest base Black Hills. Also east side of same; near Bear Peak. Bed A of the section.

We are under many obligations to Prof. Henry for the use of rooms and books, and also for other facilities at the Smithsonian Institution, while making the forgoing investigations as well as those of our former papers.

Description of New Species of Coleoptera, chiefly collected by the United States and Mexican Boundary Commission, under Major W. H. Emory, U. S. A.

BY JOHN L. LE CONTE, M. D.

GALERITA Fabr.

G. atripes, nigra, capite punctato postice oblique rotundato, thorace elongato, rugose punctulato rufo, lateribus postice late sinuatis, ad basin utrinque impresso, elytris elongatis oblongo-ovalibus, confertissime rugose punctulatis, æqualiter pubescentibus, striis punctulatis. Long. ·67.

One specimen in Dr. Berlandière's Collection, probably found on the Rio Grande: many others have been recently collected by Dr. W. A. Hammond, at Fort Riley, in Kansas. This species has the form, size and sculpture of G. Lecontei, and G. californica, but differs by the uniform pubescence of the elytra, the less sinuate sides of the thorax, and still more by the black antennae and feet.

CALLEIDA Dej.

C. planulàta, nigro-picea, supra cuprascens, thorace latitudine longiore, parum convexo, canaliculato, lateribus rotundatis, ante medium magis angustato, pone medium parum angustato, utrinque ad basin profunde late foveato; elytris interstitiis paulo convexis parce punctulatis, margine virescente ante medium subimpresso, antennis articulis tribus primis ferrugineis. Long. ·48.

One specimen from Dr. Berlandière's Collection. The base of the thorax is broadly subsinuate, and only slightly oblique towards the angles, which thus become almost rectangular, although the sides of the thoràx are not sinuate.

C. cyanoptera, rufa, capite nigro-cyaneo, thorace latitudine fere sesqui longiore, minus convexo canaliculato, lateribus late rotundatis, pone medium paulo angustato, et lateribus subsinuato, utrinque profunde impresso; elytris læte cyaneis, tenuissime punctulato-striatis; abdomine genubusque nigris, antennis extrorsum nigro-piceis. Long. ·32—·38.

Also from Dr. Berlandière's Collection. Larger than C. decora; the thorax is less convex, more broadly rounded on the sides anteriorly, and less narrowed and sinuate hehind the middle. The posterior angles are hardly prominent, and owing to the obliquity of the base are very obtuse.

STENOMORPHUS Dej.

S. rufipes, valde elongatus, niger nitidus, thorace latitudine sesqui longiore, postice sensim angustato, angulis posticis rotundatis, ad basin utrinque breviter et profunde impresso, elytris profunde striatis, antennis palpis pedibusque obscure ferrugineis. Long. ·42.

Dr. Berlandière's Collection.

HARPALUS Latr.

H. laesus, ovalis supra æneus, thorace latitudine fere duplo breviore, lateribus rotundatis, magis versus apicem, postice subangustato et utrinque vix impresso, angulis posticis obtusis, fortius marginato, margine diaphano;

elytris tenuiter striatis, striis 2nda et 5ta multifoveatis, ad marginem subtiliter pubescentibus; palpis pedibusque ferrugineis, antennis fuscis ad basin ferrugineis. Long. ·29—·36.

Fort Gates, Texas, and Tampico, Mr. H. Haldeman. Resembles closely H. stigmosus, *Germ.*, but is a little more elongated; the thorax is more strongly margined, and the posterior angles are much more obtuse; belongs to the group Selenophorus *Dej.*

H. gravis, crassus convexus, capite thoraceque nigro-æneis nitidis, hoc latitudine fere duplo breviore, lateribus antice rotundatis, basi truncata, utrinque fovea parva notata, angulis posticis rectis; elytris virescentibus nitidis, striis profundis, interstitiis planis, 3io unipunctato, margine corporeque subtus rufo-piceis, pedibus antennisque ferrugineis. Long. ·34.

One male found at San Antonio, Texas, by Mr. Haldeman. Shorter and stouter than most species of the genus, with the antennæ slightly moniliform, and hardly reaching the base of the thorax; the labrum is piceous and slightly emarginate; the emargination of the mentum is nearly square, and the medial tooth obsolete; the ligula is dilated and truncate, as in the other species with inflated paraglossæ.

STENOLOPHUS Dej.

S. flavipes, nigro-piceus nitidus, thorace transverso, lateribus rotundatis, limbo omni anguste piceo-testaceo, ad basin utrinque late impresso et punctulato, angulis posticis valde rotundatis, elytris thorace latioribus, limbo laterali piceo-testaceo, striis postice profundioribus, interstitiis paulo convexis, 3io unipunctato; pedibus palpisque testaceis, antennis fuscis ad basin testaceis. Long. ·32.

San Diego, California. Resembles S. ochropezus, and belongs to the same division of the genus, but is much larger, with the thorax more transverse and more rounded on the sides.

S. cincticollis, nigro-piceus nitidus, thorace latitudine vix breviore, postice angustato, lateribus rotundatis, angulis omnibus rotundatis, limbo omni testaceo, ad basin rugoso utrinque punctulato vix foveato, elytris cyaneo-micantibus limbo laterali testaceo, striis profundis postice exaratis, 2nda unipunctata, pectoribus medio, pedibus, ore antennisque flavo-testaceis, his extrorsum fuscis. Long. ·25.

One male found on the Colorado River, near the Gila. Of the size and form of S. dissimilis, but of a different color, and with the basal foveæ of the thorax less marked; the middle tarsi are slightly, the anteriorly broadly dilated.

BRADYCELLUS Er.

B. nitens, testaceus nitidissimus, capite infuscato pone oculos punctato, thorace latitudine breviore, lateribus rotundatis postice paulo angustato, angulis posticis obtusis vix rotundatis, ad apicem parce ad basin densius punctato et utrinque profunde impresso, elytris thorace latioribus, infuscatis, basi, sutura margineque piceo-testaceis, tenuiter striatis, interstitiis planissimis, 3io unipunctato, ad apicem et marginem parce subtiliter punctatis, postpectore abdomineque nigro-piceis, antennis fuscis ad basin testaceis. Long. ·20.

San Diego, California, one specimen. Very distinct from all others known to me except B. longiusculus from Sitkha; it differs however from that by its larger size, paler color, and more slender striæ.

B. nubifer, rufo-testaceus nitidus, capite saturatiore, thorace latitudine vix breviore, lateribus rotundatis, postice paulo angustato, angulis posticis obtusis subrotundatis, ad basin utrinque late foveato et introrsum parce punctato; elytris elongatis, thorace paulo latioribus striis profundis, interstitiis paulo convexus, 3io unipunctato, 2—4 a medio fere ad apicem nigris; postpectore abdomineque nigro-piceis, ano rufo-testaceo, antennis paulo infuscatis, ad basin testaceis. Long. ·17.

A very pretty species found by me at San Diego, California, and at Tuvac in Northern Sonora. The scutellar stria is merely a basal puncture.

B. rivalis, rufo-testaceus nitidus, thorace latitudine vix breviore lateribus rotundatis, postice paulo angustato, angulis posticis obtusis minime rotundatis, ad basin utrinque late foveato et subtilius punctato, elytris elongatis thorace paulo latioribus, striis profundis, interstitiis paulo convexis, 3io unipunctato, sæpe pone medium utrinque infuscatis; subtus concolor, antennis fuscis ad basin testaceis. Long. ·12—·14.

Colorado Desert, at New River and at the Colorado. Readily distinguished from the preceding by the uniform color of the under surface; and by the finer and more numerous punctures of the base of the thorax; the posterior angles are also not rounded but almost prominent.

B. ventralis, rufo-testaceus nitidus, capite saturatiore, thorace latitudine vix breviore, lateribus rotundatis, postice paulo angustato, angulis posticis obtusis rotundatis, ad basin utrinque late foveato et ad medium punctato, elytris elongatis thorace paulo latioribus, striis profundis, 2nda unipunctata; pectore abdomineque obscuris, antennis vix infuscatis. Long. ·17.

One specimen found on the Gila River. Of the same form as B. nubifer, but distinguished by the finer and more numerous punctures of the base of the thorax. Both species resemble in form B. rupestris, but differ by the punctures being accumulated at the inner part of the basal foveæ, leaving the angles smooth, while the latter themselves are more rounded.

Pasimachus Bon.

P. viridans, niger nitidus, thorace limbo laterali et basali læte viridiæneo, latitudine breviore, lateribus rotundatis anguste marginatis, postice brevissime sinuatis, angulis posticis parvis rectis; elytris planiusculis subovatis, postice subacutis, seriatim punctulatis (seriebus per paria approximatis), limbo laterali et basali læte viridi-æneo, margine ad basin magis reflexo, humeris vix distinctis, carina humerali brevissima fere nulla; tarsis posticis tibiis haud longioribus. Long. 1·08.

One specimen, Sonora, Mr. Schott. A very distinct species, remarkable not only by its color, but by the almost entire absence of the humeral carina. The second, third and fourth joints of the antennæ are less compressed than in P. depressus and validus.

Lymnæum Stephens.

L. laticeps, piceum, rufo-tinctum, depressum, capite magno, oculis parvis rotundatis haud prominulis, fronte utrinque breviter impressa, thorace capite haud latiore, trapezoideo, lateribus subrotundatis et subsinuatis, angulis posticis rectis, linea dorsali profunda utrinque abbreviata, ad basin vix foveato; elytris ellipticis striis externis obliteratis internis distinctis, 5to et submarginali postice profundis, dorso bifoveatis, palpis pedibusque testaceis fusco-testaceis. Long. ·14.

One specimen from the seashore at San Diego, California.

Quedius Leach.

Q. explanatus, niger parum nitidus, capite subtiliter parce punctulato, thorace elytris fere latiore, lateribus explanatis; abdomine elytrisque pubescentibus, his subtiliter dense punctulatis, antennis utrinque attenuatis. Long. ·38—·5.

San Diego, California, under stones. A fine species very different from any previously described. It belongs to division (*1) of Erichson.

PÆDERUS Fabr.

P. **femoralis**, alatus, rufus nitidus, elytris cyaneis grosse punctatis, capite, abdominis segmentis ultimis duobus, postpectore pedibusque nigris, his coxis femorumque dimidio interiore rufis, antennis tenuibus ad basin rufis. Long. ·41.

Two specimens found on the Gila River, below the Pima villages, one was subsequently destroyed, and the other is imperfect. Head black, shining sparsely punctured, more grossly towards the sides; before the eyes transversely impressed. Palpi rufous. Antennæ slender, joints 1—3 red, third more than twice as long as the second, and blackish at the tip; 4th and 5th black, the others wanting. Thorax oval convex narrowed behind, one fourth narrower than the head, a little longer than wide, shining red, with a few very small punctures and erect hairs. Elytra as long as the thorax, cylindrical, bright blue, grossly and densely punctured; abdomen smooth, shining red, with the last two joints black. Beneath red, postpectus blackish. Feet black, with only the coxæ and basal half of the thighs red.

P. **ustus**, alatus rufo-testaceus nitidus, elytris fusco-ferrugineis minus dense punctatis, abdominis segmento ultimo antennisque piceis, his basi testaceis. Long. ·18.

Colorado River, about the junction of the Gila: very abundant in March and April. Remarkably different from the other species by the color, which is of an almost uniform yellowish red. Antennæ slightly thickened externally, fuscous with the first four joints rufous. Head with a few large lateral posterior punctures. Thorax a little longer than wide, hardly narrower than the head, oval convex slightly narrowed behind, truncate at base, disc with a few scattered punctures. Elytra convex usually dark ferruginous, sometimes hardly darker than the rest of the body, as long as the thorax, strongly not densely punctured. Abdomen very sparsely punctured, last joint piceous.

COLASTUS Er.

C. **obliquus**, depressus ovalis, niger griseo-pubescens, thorace subtilius punctato, antrorsum angustato, margine angusto testaceo postice latiore, elytris subtilius punctatis, obscure rufo-testaceis, limbo laterali postice latiore apicalique nigris, sutura paulo infuscata, antennis nigris, pedibus obscure rufis. Long. ·1.

Variat (immaturus), piceo-testaceus, elytrorum disco a humeris ad suturæ apicem pallidiore, versus scutellum infuscato.

Colorado River, California. Of the same size and form as the next species, from which it differs by the less dense punctuation of the thorax, and by the lateral black margin of the elytra being gradually broader from the humerus, and by the base not being margined with black.

C. **limbatus**, depressus ovalis, niger griseo-pubescens, thorace confertissime subtilius punctato, antrorsum angustato, margine angusto angulisque posticis indeterminate testaceis, elytris confertim subtilius punctatis, testaceis limbo omni æquali suturaque nigris, abdomine subtilissime punctulato, pedibus antennisque testaceis, his clava paulo infuscata. Long. ·1.

Colorado River, near the Gila.

CARPOPHILUS Leach.

C. **discoideus**, oblongus fere depressus, piceus nitidus, subtiliter pubescens, thorace brevi, lateribus rotundatis marginatis, subtilius punctato, elytris thorace duplo longioribus, fortius marginatis, subtilius punctulatis, macula testacea triangulari postice truncata antice attenuata utrinque ornatis; pedibus antennisque rufis his clava paulo infuscata. Long. ·09.

One specimen found at the Colorado River, near the Gila. Somewhat allied to C. **marginatus** Er., but larger, more regularly oblong and more flattened.

Temnochila Westwood.

T. acuta, læte viridi-ænea, cyaneo-micans, capite antice subtilius, postice vage grosse punctato, thorace latitudine haud longiore parcius punctato, lateribus late rotundatis, postice angustato, angulis posticis haud prominulis, elytris thorace haud latioribus, humeris acutis, subrugosis seriatim subtilius punctatis, punctis postice minus profundis. Long. ·58.

One specimen, Texas, Mr. Haldeman. Resembles T. chlorodia, but the thorax is more regularly rounded on the sides, and less suddenly narrowed behind, and the posterior angles are not at all prominent; the series of punctures of the elytra are less effaced towards the tip.

T. aerea, olivaceo-ænea, subnitida, capite antice subtilius, postice vage grosse punctato, thorace latitudine haud longiore, lateribus antice parallelis, postice oblique angustato, angulis posticis paulo prominulis, elytris thorace haud latioribus, subtiliter rugosis, subseriatim punctatis, punctis postice paulo minus profundis. Long. ·58.

One specimen, San Francisco, California. Differs from the other species known to me by the rounded humeral angles of the elytra, the punctures are arranged in rows, but as they are all of the same size and not closely placed, the rows appear somewhat confused.

Anchomma Lec.

A. costatum, elongatum piceum opacum, punctatum, pube pallida rigida parce vestitum, capite margine late deplanato, utrinque late sulcato, thorace latitudine longiore lateribus pallidioribus, rectis marginatis, dorso acute bicostato; elytris margine costisque utrinque tribus acute elevatis, interstitiis biseriatim punctatis; antennis crassis rufo-piceis, oculis divisis. Long. ·13.

One specimen from the sea shore at San Diego, California. This new genus is closely allied to Corticus and Sarrotrium. The antennæ are thick and setose: the first and second joints are equal, the third is nearly one half longer; 4—10 transverse, 11th narrower subquadrate. The sides of the head are dilated, so as to divide the eyes into two small linear portions, one superior, the other inferior. The mentum, palpi, feet and tarsi are as in Corticus. The first three joints of the abdomen are equal in length, the fourth is shorter, and the fifth hardly longer than the fourth.

Ditoma Latr.

D. sulcata, linearis, obscure ferruginea opaca, capite thoraceque scabris, parce setulosis, hoc marginato vix serrato, utrinque alte costato, elytris sutura, margine costisque utrinque quatuor acute elevatis, seriatim setulosis, interstitiis rugosis vix punctatis biseriatim setulosis. Long. ·13.

Colorado River, about Fort Yuma.

D. ornata, linearis depressa, picea opaca, capite thoraceque fortiter scabropunctatis setulosis, hoc lateribus marginatis serratis, angulis anticis parum prominulis, omnibus rotundatis, utrinque bicostato, elytris sutura margine costisque quatuor acute elevatis seriatim setulosis, interstitiis biseriatim cribratis et breviter setulosis, macula subbasali alteraque pone medium magnis rufis utrinque ornatis, antennis pedibusque obscure ferrugineis. Long. ·11—·13.

Found with the preceding. Larger and more depressed than D. quadriguttata, with the angles of the thorax more rounded.

Synchita Hellwig.

S. variegata, oblongo-elongata, fusca opaca scabra, albo-setulosa, antennis pedibus elytrisque testaceis, his nigro-tesselatis, margine sutura costisque quatuor angustis elevatis, interstitiis biseriatim cribratis. Long. ·09.

Fort Yuma, Colorado River, California. Body oblong elongate, slightly convex, blackish brown; head and thorax scabrous, covered with short white hairs, which are decumbent though rigid. Thorax not wider than long, not narrowed

anteriorly, emarginate in front, broadly rounded with a depressed lateral margin, which is partly testaceous, disc with two faint impressions near the base. Elytra tesselate with yellow and black; the spots are usually arranged so as to form a scutellar triangular spot, two undulating bands, two or three subapical dots, and the lateral margin black; the suture, margin and four discoidal costæ are acutely elevated, and crested with pale decumbent hairs; intervals with two rows of quadrate punctures and short decumbent setæ; antennæ and feet pale testaceous.

The sculpture of this species differs from that of the others known to me, but there are no sulci for the antennæ on the under surface of the head, and the club is solid.

CRYPTOPHAGUS Herbst.

C. debilis, oblongus parum convexus, testaceus punctatus, dense pubescens, thorace transversim quadrato, lateribus late rotundatis, medio subtiliter unidentatis, angulis anticis rotundatis haud dilatatis, elytris versus suturam substriatis. Long. ·07.

One specimen from Santa Isabel. Of the form of C. cellaris, but smaller, with the middle tooth of the thorax very faint, and the anterior one entirely wanting; the sides are broadly rounded, and behind the tooth may be seen two or three very faint small teeth.

C. pilosus, oblongus parum convexus, piceus fortiter punctatus, longius pilosus, thorace transversim quadrato, lateribus late rotundatis, depresso-marginatis, bidentatis, dente antico distincto, posteriore ad medium sito; elytris subseriatim pilosis. Long. ·09.

Fort Yuma, California. Also resembles C. cellaris, but is more coarsely punctured.

MONOTOMA Herbst.

M. marinum, elongatum subdepressum, fuscum vel fusco-testaceum opacum, punctatum, breviter parce pallide pubescens, thorace latitudine longiore, postice subangustato, lateribus subtilissime serrulatis, late sinuatis, angulis omnibus rectis, antennis articulo penultimo sequente vix angustiore. Long. ·15.

San Diego, on the sea shore under Fucus giganteus. Although differing from the previously described species of the genus by the 9th joint of the antennæ being nearly as broad as the tenth, I prefer that this and the following species should be placed here, rather than that the number of genera should be multiplied on characters of light weight. From the larger size of the insect, I have been able to investigate in a satisfactory manner the structure of the tarsi, and find them to be four-jointed; the 3rd joint is however quite small, and closely attached to the fourth. On this account, as well as from the elongation of the fifth ventral segment, and the apparently close articulation of the anterior segments, I am disposed to remove Monotoma from the Lathridiidæ to the Colydiidæ, where it may form a group similar in value to the five others into which that family has been divided.

M. rufipenne, elongatum, subdepressum, nigrum subnitidum capite thoraceque punctatis, breviter pallide pubescentibus, hoc latitudine longiore, postice subangustato, angulis anticis acutis, posticis obtusis, dorso versus basin vage arcuatim impresso; elytris thorace haud latioribus, rufis pone medium nigricantibus, striis sex punctulatis, alterisque externis obliteratis, in striis brevissime pilosis; pedibus antennisque rufis, his articulo 9no decimo vix angustiore. Long. ·09.

San Jose, California, under bark of oak trees. This species is here added for the sake of illustrating the next, though it does not, so far I know, inhabit the region herein reported on. The pygidium as in the next is prominent, but not so large.

M. striatum, elongatum depressum, rufescens nitidum, capite thoraceque nigricantibus, illo parce et vage, hoc subseriatim parce punctato, latitudine longiore, postice subangustato, lateribus late rotundatis, angulis subrectis rotundatis, linea dorsali lata lævi, postice utrinque breviter impresso; elytris striis sex tenuibus antice punctatis, alterisque externis obliteratis, in striis vix brevissime pilosis, læte rufis, margine laterali quadranteque postico nigris. Long. ·07.

Colorado River, at Fort Yuma. The impressions towards the base of the thorax limit the dorsal smooth space, and are formed by the confluence of three or four punctures. The pygidium is larger and more prominent than in M. rufipenne, and is nearly horizontal.

Closely allied, and belonging to the same genus is Rhizophagus capito *Fairemaire*, a species found in the Sandwich Islands. On comparison, however, it is seen that the punctures of the thorax are larger than in M. striatum, though also unequally distributed in rows; the punctures and striæ of the elytra are deeper, the red portion of the latter extends from the base for only one third the length, and finally the head thorax and under surface are black, with only the feet and and antennæ red.

APHODIUS Illiger.

A. dentiger, obovalis convexus, ater nitidus, clypeo parce punctato haud tuberculato, antice declivi, ad apicem linea elevata angulata notato, et subreflexo, dentibus duobus acutis parvis armato; thorace brevi antrorsum subangustato, angulis omnibus rotundatis, lateribus subrectis, parce punctato, ad basin subtiliter marginato; elytris striis punctulatis, interstitiis planis, biseriatim parce punctulatis, mesosterno haud carinato; tibiis anticis valde tridentatis, posticis spinulis æqualibus coronatis. Long. ·25.

Copper mines of the Gila, Dr. Webb; one specimen. Very distinct from all others in my collection by the peculiar construction of the apex of the clypeus; the outline is not emarginate, but the apical portion is slightly deflexed and marked with a transverse elevated angulated line, meeting the margin each side within the base of a small but acute tooth. The clypeus is not perceptibly tuberculate, or I might give the species to the same division with A. ursinus, aleutus and others from Western America; were it not that the terminal fringe of the posterior tibiæ is composed of equal spines it could be placed near A. bicolor. In A. oblongus may be observed two similar teeth at the anterior part of the clypeus, but there is no intermediate elevated line, and the base of the thorax is broadly sinuate each side.

A. militaris, oblongus ferrugineus, nitidus, clypeo modice punctulato, antice utrinque parce minus subtiliter granulato, postice obsolete trituberculato, ad apicem late truncato, acute bidentato, thorace subtilius punctato distinctius versus latera, transverso, lateribus rotundatis fortius marginatis, ad basin subtilissime marginato, elytris striis tenuibus punctulatis, interstitiis planis, dense subtilissime punctulatis, biseriatim subtiliter punctatis, mesosterno haud carinato, tibiis anticis valde tridentatis, posticis spinulis inæqualibus coronatis. Long. ·2.

San Diego, California. I am inclined to place this in the same division with the preceding, though the apical fringe of the posterior tibiæ is composed of unequal spines.

EUPARIA Lepell. (emend. Er.)

Eu. cognata, oblonga, nigra, clypeo subemarginato, punctato, antice rugoso, thorace punctulato et parce punctato, latitudine breviore, lateribus parallelis, antice paulo rotundatis, elytris striis crenatis modice profundis postice exaratis, interstitiis antice parum convexis, humeris prominulis. Long. ·17—·23.

Texas and Senora; Mr. Haldeman and Dr. Webb. Resembles Eu. stercorator, but the thorax is more transverse, and not at all narrowed towards the base, but even a little narrowed anteriorly. It more nearly resembles Eu. strigata, but differs by the more strongly punctured head and thorax.

Eu. puncticollis, oblonga ferruginea, nitida, clypeo subemarginato, antice rugoso, thorace latitudine breviore, confertim punctato, lateribus parallelis subrectis, angulis omnibus rotundatis, elytris humeris parvis acutis, striis impunctatis, insterstitiis vix convexis, biseriatim subtiliter punctulatis. Long. ·4.

A very distinct species of which but a single specimen was found by Dr. Webb at El Paso.

Psiloptera Sol. (emend. Lac.)

P. Webbii, crassa chalybea, capite thoraceque punctis viridi-æneis variegatis, hoc inæqualiter punctato, ad basin medio late foveato, latitudine fere duplo breviore, antrorsum angustato lateribus ad medium obtuse angulatis, dein vix subsinuatis, angulis posticis rectis; elytris striis punctatis, interstitiis spatiis impressis quadratis granulatis pubescentibus viridiaureis ornatis, ad apicem oblique paulo truncatis; subtus dense grosse viridipunctato; prosterno bisulcato. Long. 1·06—1·25.

Found at Ures, Sonora, by Dr. Webb. Allied to Dicera Woodhousei *Lec.*, but it is larger and stouter, and differs not only by the thorax not being dilated in front of the base, but by the ground color being bluish black, not bronzed, as well as by the elytra being distinctly and obliquely truncate at tip. The impressed green metallic spots of the elytra vary in number; in one specimen they are few, forming irregular narrow fasciæ, while in another they are confluent, and cover more than half the surface.

P. valens, crassa, chalybea, capite thoraceque punctis viridi-æneis variegatis, hoc inæqualiter punctato, ad basin medio late foveato, latitudine fere triplo breviore, ante basin latiore, lateribus antice valde rotundatis, postice sinuatis angulis posticis rectis; elytris striis punctatis, interstitiis spatiis plurimis quadratis granulatis pubescentibus viridi-æneis impressis, ad apicem oblique subtruncatis, sutura prominula; subtus dense grosse viridipunctato, prosterno bisulcato. Long. ·9—1·15.

Eagle Pass, Texas; Mr. Schott. Also resembles P. Woodhousei, but differs by the thorax being shorter, more dilated and more rounded on the sides; the ground color, as in P. Webbii is bluish black.

Chalcophora Sol. (emend. Lac.)

C. planicosta, ænea virescens, subtiliter dense punctulata, thorace transverso, antrorsum angustato transversim constricto et lateribus rotundato, angulis posticis acutis divaricatis, ad basin late trisinuato, dorso plaga elongata antice abbreviata, callisque versus latera pluribus chalybeis nitidis; elytris sutura, lineis tribus integris, cum scutellari humeralique brevibus, parum elevatis chalybeis nitidis, costa singula bistriatim punctata, ad apicem subserratis et subbidentatis. Long. 1·05—1·13.

San Diego trip, Dr. Webb. The head is finely pubescent; the anterior margin of the thorax is densely ciliate with yellowish white hair. The under surface is finely very densely punctured, finely pubescent, with the middle of the sterna and the middle posterior margin of the abdominal segments shining and coarsely punctured. The sterna are each impressed with a short deep medial furrow: the mesosternum is widely divided.

C. obliterata, ænea cuprascens, subtiliter dense rugose-punctulata, capite lineis nitidis reticulato, thorace transverso, antrorsum angustato, transversim constricto et lateribus rotundato, angulis posticis acutis divaricatis, ad basin late bisinuato, costa dorsali antice abbreviata, callisque pluribus lævibus nitidis chalybeis, margine basali præcipue ad medium elevato; elytris sutura lævigata parce punctata, costis tribus integris humeralique brevi fere obliteratis, et tuberculis parum elevatis compositis, postice serratis ad apicem bidentatis. Long. ·77—1·0.

Dr. Webb. Found with the preceding, which it resembles in form and characters. It is however more slender, the basal margin of the thorax is more elevated, and the costæ of the elytra are hardly to be seen. The sculpture of the under surface is precisely as in L. planicosta.

C. caelata, capite æneo punctato, lineis elevatis reticulato, thorace rugis profundis ænescentibus punctatis minus densis insculpto, interstitiis elevatis politis cyanescentibus, antrorsum angustato, lateribus late rotundato, ad apicem transversum impresso, ad basin trisinuato, angulis posticis acutis; elytris punctato-striatis, transversim parce at profunde rugosis, postice subserratis, ad apicem truncatis bidentatis; subtus ænea pubescens dense punctata, pectore abdominisque segmentis postice grosse punctatis, nitidis chalybeo-variegatis. Long. ·93.

One specimen found at Ures, Sonora, by Dr. Webb. This has also nearly the same form and general characters as the two preceding, but the sculpture both above and beneath is much coarser. The tip of the 5th ventral segment of the abdomen in them is broadly emarginate, with an acute elevated transverse line before the tip; the lateral angles in one sex project in the form of teeth, while the outline in the other sex is simply sinuous.

In the present species the line is not so acutely elevated, and beyond the 5th joint is seen a short punctured brown appendage, which is prolonged at the middle into an obtuse process.

The antennal pores in this and in B. sphenicus Lec. which is strictly congeneric, are more numerous than in the two preceding, and occupy nearly the whole of the sides of the outer articulations; the basal joint of the posterior tarsi is also but little longer than the second.

CHRYSOBOTHRIS Esch.

C. gemmata, latiuscula, depressa, capite punctato læte æneo, chalybeo-variegato, thorace punctato densius versus latera, subcanaliculato, ad latera utrinque, et ad apicem oblique impresso, versus basin utrinque late foveato, his impressionibus omnibus in fundo inauratis; elytris purpureis, punctatis, costis antice obliteratis postice autem distinctis, 3ia pone stigma haud extensa; fovea basali, stigmate ante medium, alteroque externo pone medium reniformibus, tertioque interno triangulari læte inauratis dense punctatis, strigaque brevi humerali aurea ornatis; subtus viridiaurea nitida punctata, segmentis abdominis postice, pleurisque chalybeis. Long. ·88.

Sonora; two females collected by Mr. Schott. The sides of the thorax are in one specimen obliquely truncate at the anterior angles, then oblique and slightly converging to the base: in the other specimen they are rounded anteriorly instead of truncate. The 5th ventral segment is carinate in the middle, but the usual lateral tooth is not seen.

C. octocola, depressa ænea, capite sæpe virescente, dense rugose punctato, thorace dense subtilius punctato, latitudine breviore, lateribus parum rotundatis, antice oblique subtruncatis, elytris subtilius confertim punctatis, costis duabus primis integris, 3ia postice, 4ta vero antice abbreviata, fovea profunda basali, stigmatibusque tribus dense punctatis inauratis ornatis, primo ante medium in costam 2ndam, 2ndo pone medium in costam 3iam sæpe reniformi, tertio triangulari inter costas 1mam et 2ndam; subtus ænea punctata. Long. ·45—·65.

Found in Texas, by Messrs. Haldeman, Schott, and Weise; in Sonora by Mr. Schott, and on the Colorado River near the Gila by myself. Varies much in size and form. The anterior and middle tibiæ of the male are much curved, but slender and armed internally with only a few very small teeth. This species lives on the various species of Mezquite. The 5th ventral segment of the female, as usual, is finely carinate in the middle, with the lateral teeth distinct.

C. basalis, longiuscula depressa, æneа, capite virescente, densissime rugose punctato, thorace subtilius dense punctato, parcius autem in disco, linea dorsali indistincta sublævi, latitudine breviore, lateribus obliquis antice oblique truncatis, callo angusto basali utrinque notato, elytris subtilius punctatis, costa 3ia postice abbreviata, fovea profunda basali stigmatibusque tribus sicut in priore positis subauratis, subtus ænea punctata. Long. ·7.

Laredo to Ringgold Barracks, Mr. Schott. Resembles the preceding, but is longer and less densely punctured. The impressed spots of the elytra are similar, but less brightly colored. The sexual characters are quite distinct; the anterior and middle tarsi of the male are thicker, much curved and armed with several distinct teeth internally; on the anterior tibiæ these teeth are placed from the middle to the tip, but on the middle tibiæ they are all within the limits of the middle third. The female has the same sexual characters as in C. octocola.

C. exesa, latiuscula, ænea, capite dense punctato, multicalloso, thorace latitudine breviore, lateribus obliquis antice oblique truncatis, inæquali valde punctato, partibus elevatis fere lævibus nigricantibus; elytris postice fortius serratis, dense minus subtiliter punctatis, costa 1ma integra, reliquis interruptis, partibus elevatis lævibus nigricantibus, stigmatibus duabus magnis transversis trilobatis subauratis. Long. ·36—·42.

A female found by me on the Colorado, and another by Mr. Schott in Sonora. Evidently related to C. scabripennis *Lap.* (*Bup. trinervia* Kirby); it is however much more uneven and more strongly punctured. The complete breaking up of the second and third of the elevated lines of the elytra does not take place in any other species known to me; the punctures beneath are large; the fifth ventral segment has a smooth medial space, but is not carinate; the lateral tooth is very distinct.

POLYCESTA Esch.

P. elata, nigro-ænea, fronte concava, thorace inæqualiter punctato, callo utrinque ad apicem lævi notato, medio late sulcato, in medio ipso tenuiter carinato, et postice subtiliter canaliculato, utrinque ad basin late excavato, antrorsum valde angustato, lateribus pone medium angulatis, elytris postice oblique angustatis, seriatim clathratis, dense punctatis, interstitiis alternis elevatis, sutura antice, 3ia et 5ta valde elevatis lævibus. Long. ·93.

One specimen, Texas, Mr. Haldeman. Resembles P. californica *Lec.* Pac. R. R. Expl. vol. 9 (insects), 45, but is larger: the posterior angles of the thorax are less obtuse, and the medial excavation is carinated; the suture of the elytra is elevated towards the base.

There are now known to me five species of Polycesta found within the limits of the United States: they may be thus distinguished.

A. Prothorax with three large excavations; elytra strongly costate.

* Front deeply concave.

1. Elytra moderately clathrate; interstices (except the smooth costæ) densely punctured, P. elata Lec.
2. Elytra coarsely clathrate; interstices (except the smooth costæ) sparsely punctured, P. cavata Lec.

* * Front slightly concave.

3. Elytra moderately clathrate; interstices (except the smooth costæ) densely punctured, P. californica Lec.

B. Thorax excavated only at the middle.

4. Medial excavation distinct; elytra variolate in rows, 3rd interstice wider and more elevated towards the base; obtusely rounded behind, P. obtusa Lec.
5. Medial excavation weak; elytra coarsely punctate-striate; interstices sparsely punctured, alternately a little more elevated, P. velasco Lap.

P. cavata is a small species (·7 inch long) found in Alabama by Mr. Hentz, and given me by Prof. Haldeman.

P. obtusa is a still smaller species (·48 inch long), found near Philadelphia and given me by Mr. Newman. The sides of the thorax are strongly angulated, and the elytra are not attenuated, but are parallel on the sides, and obtusely rounded behind.

ACMÆODERA Esch.

A. semivittata, æneo-nigra nitida, pube erecta hispida, fronte canaliculata, thorace dense punctato, antrorsum angustato, lateribus rotundatis flavo-marginatis, profunde oblique et in medio late triangulariter excavato, canaliculato; elytris vittis duabus, lineisque reticulatis flavis paucis pone medium, maculis nigris includentibus ornatis, punctato-striatis, striis postice impressis, interstitiis uniseriatim punctatis. Long. ·34—·45.

Eagle Pass, Texas, Mr. Schott. The yellow lines vary in width, so that the included spots are more or less numerous, but the extreme tip is always black. The spots are usually placed; two transverse ones on the suture, and five on the margin; of the vittæ, one is marginal, and the other dorsal, somewhat nearer the suture than the margin. The form of body is like that of A. pulchella.

A. haemorrhoa, elongata, cuneiformis, nigro-ænea nitida, pube erecta hispida, capite canaliculato, thoraceque dense punctatis hoc lateribus antice rotundatis, antrorsum valde angustato, puncto laterali flavo ornato, ad latera oblique, et medio triangulariter valde profunde excavato et canaliculato; elytris violaceo-nigris, humeris prominulis punctis flavis plurimis confluentibus ornatis, ad apicem minio marginatis; punctato-striatis, interstitiis uniseriatim punctatis. Long. ·4—·45.

Laredo to Ringgold Barracks, Mr. Schott. Resembles the figure of A. stellaris *Chevr.* (Col. Mex. 2nd cent. 89), as given in the monograph of Messrs. Gory and Laporte, but the apical red margin of the elytra is not mentioned.

A. gibbula, nigro-ænea, supra pilis pallidis parce vestita, thorace confertim punctato, antrorsum angustato, lateribus parum rotundatis, medio triangulariter excavato, versus basin utrinque late et profunde foveato; elytris cyaneo-nigris, humeris valde callosis, maculis pluribus magnis flavis ornatis, posticis versus latera rufo-tinctis; fortiter punctato-striatis, striis postice exaratis, 1mo antice fere obliterata, interstitiis subtiliter uniseriatim punctulatis; subtus ad latera valde albo-pilosa. Long. ·5.

Found by Dr. Webb on the journey from San Diego to El Paso. The elytra of the male are gradually narrowed behind, and sinuate on the sides; those of the female are subparallel, and very slightly sinuate, obliquely narrowed at the apex: the discoidal spots are from five to seven in number, and form a series on the 3d, 4th, and 5th interstices, some of them being wider and some narrower; the other spots are placed, a humeral dot, three marginal spots occupying two intervals, and finally three spots on the third interval from the margin; of these last the two posterior are tinged with red.

A. opacula, cuneiformis, supra nigra opaca, pilis erectis hispida, thorace brevi, dense punctato, antrorsum angustato, lateribus fortiter marginatis rotundatis flavis, margine nigro; ad medium late et profunde triangulariter excavato versus latera oblique impresso; elytris humeris callosis, maculis pluribus flavis, posticis rufo-tinctis, ornatis, ad apicem acutius attenuatis, striis fortiter punctatis, interstitiis angustis uniseriatim punctatis; subtus nigro-ænea, parce pubescens. Long. ·42.

One specimen El Paso, Mr. Clark. The strongly margined sides of the thorax will readily distinguish this species; the spaces between the rows of punctures of the elytra are hardly greater than the distances between the punctures in the rows; the spots are a marginal elongate one near the humerus, another larger marginal about the middle which includes a black spot; a basal dot on the third interval two spots before the middle extending from the second to the fifth stria, then two smaller ones, the position of which is nearer the suture, finally two transverse oblique ones reaching the margin, and a subapical dot.

A. conata, valde elongata, cuneiformis, nigra supra pilis longis lanuginosis albis parce vestita, capite thoraceque grosse punctatis, hoc antrorsum vix angustato lateribus parum rotundatis, dorso triangulariter, ad basin utrinque suboblique excavato, elytris a basi sensim, postice autem magis oblique attenuatis, punctis paucis parvis flavis ornatis, seriatim crenatis, interstitiis 3io 5toque totis, 7mo versus basin elevatis nitidis : subtus præcipue versus latera longe albo-pubescens. Long. ·38.
One specimen found by me on the Colorado River, below the Gila.

Agrilus Esch.

A. muticus, obscure cyaneus opacus, subtiliter dense punctulatus, capite canaliculato, thorace latitudine haud breviore, lateribus rectis, rugoso, postice profunde canaliculato, lateribus ad medium late impressis, angulis posticis rectis extrorsum paulo vergentibus, carina basali utrinque parum elevata, margine laterali duplici, elytris lateribus parum sinuatis, postice oblique angustatis, ad apicem rotundatis haud serratis. Long. ·33.
Texas, Mr. Haldeman.

A. macer, valde elongatus, cupreo-æneus, capite canaliculato, thorace transversim rugoso, antrorsum latiore, latitudine sesqui breviore, medio postice late excavato, lateribus oblique profunde impressis, ad basin utrinque carina acuta munito, margine laterali superiore distincto, inferiore fere obliterato ; elytris lateribus subsinuatis, postice oblique attenuatis, ad apicem serratis acuminatis, confertim subscabro-punctatis, costa a humero ad apicem modice elevata. Long. ·35.
Eagle Pass, Texas ; Mr. Schott.

Schizopus Lec.

Antennæ, 11-articulatæ, articulis 5—10 latioribus triangularibus, 11mo ovata ; clypeus minutus in fronte emarginata receptus, labrum maiusculum antice subemarginatum, mandibulæ emarginatæ. Mentum trapezoideum transversum (ligula invisa palpis deficientibus) ; palpi maxillares breves cylindrici, articulis subæqualibus : oculi mediocres ovales. Coxæ anticæ magnæ transversæ quadratæ receptæ ; mediæ eis approximatæ maiusculæ distantes ; tarsi tibiis breviores, articulis 1—3 subtus breviter, 4to autem longe bilobatis, ultimo præcedentes tres longitudine æquante, unguibus ad apicem fissis. Abdomen articulis duobus primis arcte connatis, 5to emarginato, 6to prominulo valde emarginato.

A remarkable genus, which by its form and color recalls certain Gallerucites of the family Chrysomelinæ, while the structure of the abdomen is equally suggestive of Psephenus. It seems by its general characters to belong properly among the Atopidæ; in which family, however, all the genera thus far described have but five ventral abdominal segments. The head is small; the thorax is gradually narrowed in front, closely applied to the elytra, and slightly sinuate at base. The scutel is trilobed, with the middle lobe produced into a point. The elytra are wider than the thorax, oblong, rounded at the tip, coarsely but densely punctured. The legs are moderate; the anterior tibiæ are terminated by very short spurs, but I can see none on the middle or posterior tibiæ. The anterior coxæ are large, leaving only a very short prosternum, which extends between them, and abuts against the declivous mesosternum ; the metasternum is short and flat, forming an angle with the mesosternum, which widely separates the middle coxæ ; the parapleuræ are flat, broad, and project in front; the posterior coxæ are suddenly dilated internally, truncate at tip, with the inner margin oblique; their anterior margin is curved, with the concavity forwards, and the mesosternum is sculptured with a line parallel to this margin. The joints of the abdomen are nearly

equal in length, but the 3rd and 5th are a little shorter; the 6th is deeply cleft, very small, and only visible within the emargination of the fifth.

S. laetus, oblongus, viridiæneus, subtiliter albo-pubescens, capite, thoraceque confertissime scabro-punctatis, hoc convexo canaliculato, latitudine duplo breviore, antrorsum angustato, lateribus late rotundatis et late præcipue postice subdepressis, elytris læte sanguineo-rufis, confertim minus subtiliter rugose punctatis, et subtilius parce punctatis, sutura viridiænea; tibiis tarsisque testaceis, antennis fuscis ad basin testaceis, articulo 1mo viridiæneo. Long. ·55.

CHAULIOGNATHUS Hentz.

C. profundus, fulvus tenuiter pubescens, opacus, capite nigro, thorace rotundato, subtransverso, disco inæquali margine laterali late et valde reflexo, ad apicem paulo concavo, ad basin tenuiter marginato, punctis dorso tribus nigris notato: elytris pone medium ad apicem nigris, ano nigro, abdomine postice supra et subtus biseriatim nigro maculato; antennis nigris extrorsum testaceis, pedibus nigris, femoribus dimidio basali fulvis. Long. ·65.

One specimen, Sonora, Mr. Schott. The three black spots of the thorax are in a transverse line behind the middle. The black of the elytra occupies about two-fifths of the surface.

C. limbicollis, nigro pubescens opacus, thorace transverso, subquadrato, angulis valde rotundatis, planiusculo, margine omni æqualiter anguste reflexo flavo, elytris flavis macula communi triangulari basali, apiceque late nigris, abdomine flavo, ano nigricante, tibiis tarsisque anticis piceo-testaceis. Long. ·47.

One specimen, Sonora, Mr. Schott. At first sight resembles C. scutellaris, but is very different. The posterior spot of the elytra covers more than one-third the surface.

DASYTES Fabr.

D. rufipennis, elongato-oblongus, niger punctatus, cinereo-pubescens, thorace transverso lateribus rotundatis haud serratis, elytris densius punctatis rufis, pedibus rufis, tibiis anticis extrorsum spinulosis, unguiculis omnibus valde appendiculatis; antennis nigris, articulis a 5to sensim maioribus triangularibus. Long. ·24.

One specimen found in Sonora by Mr. Schott.

CYMATODERA Gray.

C. morosa, piceo-nigra nitida, pubescens, capite thoraceque confertim punctatis, hoc latitudine sesqui longiore, antice paulo, postice magis constricto, ad medium parum haud subito dilatato, lateribus inde late bisinuatis, elytris thorace sesqui latioribus, planiusculis, subparallelis, humeris prominulis, punctis quadratis striatis, striis præcipue internis postice obliteratis, ad apicem dense subtiliter punctulatis; antennis elongatis subserratis articulo ultimo vix longiore. Long. ·53.

Sonora, Mr. Schott, one specimen. Quite distinct from all the other species known to me by the characters above given, but yet more nearly allied to C. inornata than to any other.

C. usta, piceo-ferruginea, pubescens, nitida, capite thoraceque subtiliter punctulatis, hoc latitudine fere sesqui longiore, antice vix, postice vero profunde constricto, lateribus medio rotundatim paulo dilatatis, elytris thorace plus sesqui latioribus, oblongis dorso planiusculis, punctis mediocribus striatis, postice sensim minoribus, et ante apicem obliteratis, interstitiis omnino planis, parce subtiliter punctulatis, antennis subserratis, articulo ultimo paulo longiore acuminato. Long. ·38.

Dr. Berlandiére's Collection, one specimen. This species is also sufficiently distinct from all others in my cabinet, and probably from any of those de-

scribed by Mr. Spinola in his beautiful monograph of Cleridæ. It is however, much to be regretted that his descriptions are drawn up in such a manner as to render it extremely difficult to recognize the species; the present does not agree with any of the figures in his work.

TRICHODES Herbst.

T. tenellus, elongatus, cyaneus, pilis albis erectis pilosus, capite thoraceque punctulatis, elytris linearibus, annulo humerali ramum suturalem dilatatum postice emittente, fascia ad medium introrsum oblique descendente, alteraque postica, ascendente flavis, grossius subseriatim punctatis. Long. ·22—·27.

Fort Yuma, California. At first sight this might be considered a variety of T. ornatus, but the smaller size, the more slender form and the much coarser and more regular punctuation of the elytra induce me to regard it as distinct. The markings are as in that species, except that the middle band of the elytra is more oblique: no variety in the markings was observed.

CLERUS Geoffr.

C. affiliatus, obscure rufus, albo-pubescens, thorace dense punctulato, latitudine haud breviore, antrorsum angulatim impresso, elytris densissime punctatis, versus basin fere scabris, fascia alba lata ad medium nigro-marginata ad suturam anguste interrupta, alteraque postica angusta cinereo-pubescente ad apicem nigricantibus; pedibus antennisque nigris, his ad basin rufis. Long. ·38—·5.

Texas, at Eagle Pass and Ringgold Barracks, Mr. Schott. Resembles in color C. 4-signatus, but the elytra are much more densely punctured and without lustre. The posterior band is only a little paler than the ground color, and is only rendered obvious by the cinereous hair with which it is clotted: the space between the fasciæ is partly dark rufous, while in C. 4-signatus it is entirely black.

C. latecinctus, rufus albo-pubescens, thorace subtiliter punctato, latitudine paulo breviore, antice angulatim impresso, elytris confertim æqualiter minus subtiliter punctatis, fascia lata media pallida ornatis, apice pallidiore late cinereo-pubescente, apice summo infuscato, spatio intermedio plus minusve rufo-tincto. Long. ·3—·38.

Colorado River and Sonora. Resembles somewhat C. ichneumoneus, but the thorax is not so convex, and the other characters are also different. Even in the darkest specimens the feet are rufous, but in one the abdomen is marked with two rows of black spots.

C. abruptus, brevior rufus, cinereo-pubescens, thorace confertissime punctulato, latitudine haud longiore, antrorsum angulatim impresso, elytris convexis, confertim postice subtilius punctulatis, nigris macula basali, fascia lata paulo lunata integra ad medium albidis, apice late cinereo-pubescente, postpectore abdomineque nigris, pedibus rufis. Long. ·3.

One specimen found at Eagle Pass by Mr. Schott. Must be placed near C. 4-signatus, though very different from that as from every other species known to me.

DORCATOMA Herbst.

D. grave, ovale convexum, antice obtuse acuminatum, fusco-testaceum dense subhelvo-pubescens, subtilissime punctulatum, elytris parce punctatis, striis externis duabus postice profundis antice obliteratis; antennis flavis, articulo 1mo testaceo, ultimis tribus latitudine longioribus. Long. ·11—·14.

Middle and Southern States, as far as Texas. I have adopted a manuscript name proposed hy Dr. Melsheimer.

D. pusillum, rotundato-ovale, convexum antice obtuse acuminatum, fusco-testaceum dense helvo-pubescens, subtilissime punctulatum, elytris parce punctatis, striis externis duabus pone medium impressis, antice oblite-

ratis; antennis flavis articulis tribus ultimis latitudine vix longioribus. Long. ·07—·08.

Fort Yuma, California. Resembles in color and sculpture D. grave, but is smaller and broader; the two outer striæ of the elytra are shorter and not so deep.

ANOBIUM Fabr.

A. setiferum, oblongo-elongatum, fuscum sordide pubescens, et pilis longioribus parcis erectis vestitum, thorace rotundato convexo, medio elevato fere gibbo, antice late emarginato, granulis parvis nitidis obsito, elytris grosse seriatim punctatis, punctis hic inde subconfusis, antennarum articulis 2-8 æqualibus, latitudine haud brevioribus, discretis, 9—11 elongatis, singulis funiculo haud brevioribus. Long. ·15.

One specimen from San Diego, California.

PTILINUS Geoffroy.

P. basalis, cylindricus, fuscus opacus, subsericeo-pubescens, thorace globoso punctulato, antice parce exasperato, spatio dorsali postico lævi nitido, elytris modice at haud profunde punctatis; antennis pallioribus. Long. ·15—·23.

Several females found at San Diego, California. This species is of the same form as P. bicolor *Mels.* (which is probably the female of P. ruficornis *Say,*) but it differs in the feet being of the same color as the body, while the antennæ are not very obviously paler; the more distinct posterior smooth dorsal space of the thorax, and the stronger punctures of the elytra also serve to distinguish it. P. thoracicus (*Tomicus thoracicus* Randall) has the thorax more uniformly roughened and sparsely granulate, while the dorsal space is distinctly elevated, and the antennæ are black.

APATE Fabr.

A. punctipennis, cylindrica, atra, capite opaco scabro, fronte transversim elevato, vertice nitido paulo concavo, thorace opaco, quadrato-globoso, antice valde exasperato, in cornubus duobus ad apicem protenso, postice sensim granulato et punctato, elytris nitidis fortiter punctatis, punctis versus latera seriatis, stria suturali impressa, postice oblique declivibus, margine callisque utrinque oblongis duobus elevatis. Long. ·46—·53.

Mexico, Sonora, Texas and California. The antennæ are not longer than the head.

SINOXYLON Redt.

S. sericans, cylindricum nigro-piceum, thorace transversim subquadrato, convexo, antice rotundato et valde exasperato, dein sensim granulato et punctulato, elytris tenuiter sericeo-fulvo-pubescens, antice versus suturam seriatim modice punctatis, postice oblique declivibus, margine callisque duobus oblongis utrinque elevatis, superiore altiore; antennis pedibusque obscure rufis. Long. ·17—·25.

Ringgold Barracks, Texas, Mr. Haldeman.

S. asperum, cylindricum, nigrum, thorace transversim subquadrato, convexo, antice rotundato et valde exasperato, dein sensim granulato et punctulato, elytris subtiliter fulvo-pubescentibus, antice versus suturam grosse subconfluenter punctatis, postice oblique declivibus, margine callisque duobus utrinque elevatis, superiore valde prominulo, antennis rufis. Long. ·25.

Colorado Desert, at New River. This species is of the same size and form as the preceding, but differs by the much larger punctures of the elytra: the posterior declivity is more sudden, and the upper callus more prominent. The feet are black, with the anterior femora and coxæ partly red.

S. sextuberculatum, cylindricum, nigrum, thorace transversim subquadrato convexo, antice rotundato et valde asperato, dein sensim granulato et punctulato, elytris subtiliter pubescentibus subseriatim fortiter punctatis, humeris lineisque versus basin lævibus, antice rufescentibus, postice haud punctatis oblique declivibus, margine tuberculisque utrinque tribus acutis elevatis, superiore minore, antennis pedibusque rufis. Long. ·14—·15.

Colorado Desert. Abundant.

EXOPS Curtis.

E. exesus, ater, capite confertissime granulato, thorace latitudine haud breviore convexo, postice parum angustato, lateribus rectis, angulis omnibus rotundatis, granulato-punctato, modice canaliculato, elytris thorace sesqui latioribus, cylindricis antice truncatis, fortiter cribratim postice confluenter punctatis et sensim granulatis, postice oblique declivibus et linea elevata arcuata notatis, antennis ferrugineis. Long. ·47.

Ringgold Barracks, Texas, Mr. Haldeman. The posterior curved elevated line of the elytra becomes marginal near the apex, but anteriorly bends inwards so as to define the oblique declivity. This curious species is the transition form from Exops towards Apate and allied genera.

LYCTUS Fabr.

L. planicollis, ater subtilius pubescens, thorace latitudine paulo breviore, lateribus rectis serrulatis, angulis anticis rotundatis, postice subangustato, confertim punctato, dorso late canaliculato, elytris punctulatis et seriatim brevissime puberulis. Long. 17—·25.

Colorado River near the Gila. Differs from L. striatus by the broader, flatter and less deeply excavated thorax, and by the much finer pubescence.

PELECYPHORUS Sol.

P. morbillosus, ater opacus, thorace latitudine sublongiore, lateribus late rotundatis serratis, postice subangulato, angulis basi rectis, varioloso, versus latera late subdepresso et plicato, elytris thorace duplo latioribus rotundato-ovalibus, postice valde declivibus et subacutis, ad basin truncatis, humeris dentiformibus, margine costisque utrinque duabus (interna tenuiore) elevatis plicis transversis irregularibus connexis, epipleuris sublævibus. Long. ·75.

One specimen, Sonora, Mr. Schott. This species has nearly the form of P. carinatus, but differs much in its sculpture.

HELOPS Fabr.

H. farcta, ovalis convexa, æneo-nigra nitida, capite thoraceque dense fortiter punctatis, hoc ad latera aciculato, latitudine plus sesqui breviore, antrorsum parum angustato, et lateribus late rotundato, angulis anticis acutis, ad basin subsinuato, angulis posticis rectis, elytris thorace parum latioribus striis valde profunde exaratis, interstitiis convexis. Long. ·25—·33.

New Braunfels, Texas; Mr. Lindheimer. The elytra of the female are broader and more inflated than those of the male, but in the latter the first three joints of the anterior and middle tarsi are dilated.

DACODERUS Lec.

Caput quadratum, postice in collo tenui constrictum; mentum trapezoideum concavum, fissura buccalis nulla; palpi brevissimi tenues; (maxillæ obtectæ, invisæ,) genæ prominulæ acutæ, mandibulæ parvæ haud prominulæ; labrum minutissimum. Antennæ remotæ, in fovea profunda sub tuberculo laterali insertæ, 10-articulatæ crassæ, articulis rotundatis æqualibus, 9no et 10mo paulo majoribus subtruncatis. Oculi in capitis latera postice siti, longitudinales ovales, prominuli. Thorax trapezoideus elongatus, medio transversim valde excavatus, tuberculo rotundato utrinque in lateribus munitus: elytra plana, elongata ovalia, ad basin emarginata, stria suturali profunda, epipleuris angustis. Pedes debiles, tarsi anteriores articulis 1—4 brevibus subæqualibus, 5to longiore, postici articulis 1—3 paulo elongatis æqualibus, 4to paulo longiore.

Coxæ anticæ parvæ prominulæ acetabulis confluentibus, intermediæ approximatæ, posticæ parvæ modice distantes. Abdomen articulo 1mo elongato, sequentibus sensim minoribus.

A remarkable genus, which at first sight is suggestive of Rhysodes, and seems to have no relation to any genus of Tenebrionidæ, although properly belonging to that family. I have placed it near Cononotus, in which also the anterior coxæ become contiguous by the confluence of the acetabula: there is however no other point of resemblance.

D. striaticeps, castaneus nitidus, capite thoraceque supra et subtus profunde striatis, fronte arcuatim excavata, et ad apicem foveata, thorace latitudine longiore, postice paulo angustato, angulis anticis valde rotundatis, posticis subrectis rotundatis, dorso canaliculato, ad medium transversim maxime excavato, et tuberculo rotundato haud prominulo in latere ipso munito, (quapropter latus biincisum apparet); elytra plana elongato-ovalia, thorace paulo latiora, ad basin emarginata, profunde minus dense punctata, stria suturali exarata, abdomine parce profunde punctato. Long. ·15.

Fort Yuma, California, under bark of cottonwood; very rare.

Opatrinus Latr.

O. aciculatus, oblongo-ovalis, parum convexus, niger opacus, brevissime parce pubescens, thorace æqualiter confertissime aciculato, lateribus antice rotundatis, postice subparallelis, late depresso-reflexis, margine incrassato, elytris fortiter striato-crenatis, (punctis interstitiis parum angustioribus), his parce punctulatis; prothorace subtus profunde sulcato-punctato, parapleuris grosse punctatis, abdomine modice punctato. Long. ·4.

Texas, Mr. Lindheimer; two females. Seems to differ both from O. anthracinus and moestus *Muls.* (Opusc. Entom. No. 5, p. 79, 82) by the thorax being densely aciculate, with the sides strongly depressed and somewhat reflexed. From O. notus it is at once known by the more strongly striate elytra and by the very deep grooves of the under surface of the prothorax.

Glyptotus Lec.

Mentum triangulare, angulis anticis acutis, medio valde elevatum et antice acuminatum. Antennæ tenues, extrorsum sensim incrassatæ. Caput pone oculo superne utrinque sulco maxime profundo insculptum. Pedes tenues, femoribus haud clavatis, tibiis haud sulcatis, tarsis tibiis brevioribus subtus aureo-pilosis, posticis articulo 4to reliquis conjunctis haud breviore. Corpus alatum.

A genus closely allied to Upis, but of a more robust form, and differing by the shorter legs and posterior tarsi, and by the non-clavate femora. It approaches most nearly to a genus (probably nondescript) represented by Tenebrio femoratus *Beauv.* (*Upis fulvipes* Herbst), but that species has the mentum much less elevated, and the antennæ more thickened externally so that the penultimate joints become transverse; the postocular groove in it is reduced to a short line or oblong fovea.

G. cribratus, niger subopacus, capite fere lævi, inter oculos transversim late impresso, thorace latitudine breviore, lateribus antice rotundatis deflexis, posticis subrectis, elytris thorace latioribus, oblongis convexis, humeris obliquis prominulis, punctis oblongis remotis seriebus 8 utrinque positis, interstitiis vix obsoletissime punctulatis. Long. ·45—·6.

Georgia and Texas. Besides the eight rows of large remote punctures, there is a marginal series and a short scutellar one. The body beneath is almost free from punctures. The sides of the thorax converge a little behind the middle, and are almost straight to the posterior angles, where they are bent a little inwards.

Mordella Linn.

M. comata, longiuscula, transversim convexa, nigra densissime longius

flavescenti-cinereo-pubescens, elytris parallelis postice obtusis, stylo anali mediocri, antennis pedibusque testaceis. Long. ·19.

One specimen, Fort Yuma, California. No other species in my collection resembles this in color and pubescence.

M. vilis, elongata sublinearis, nigra tenuiter griseo-pubescens, thorace parce subtilissime, elytris densius punctulato-strigosis; stylo anali longo, thorace basi utrinque late sinuato. Long. ·10—·12.

San Diego, California. This species has the form of M. nigricans *Mels.*, but it is more finely pubescent, and the basal lobe of the thorax is less prominent.

M. nubila, elongata linearis, flavo-ferruginea, dense luteo-pubescens subsericea, thorace latitudine haud breviore, ad basin utrinque modice sinuato, disco postice paulo obscuriore, elytris sutura anguste, lateribusque prope medium paulo infuscatis; stylo anali longo, parapleuris tarsisque posticis infuscatis. Long. ·15.

One specimen, San Diego, California.

ANASPIS Latr.

A. pusio, elongato-ovalis, tota testacea concolor, dense fulvo-pubescens, sericea, thorace latitudine sesqui breviore ad basin late sinuato. Long. ·05.

One female, Fort Yuma, California. More robust than the other species known to me, but especially distinguished by its small size.

A. laetula, elongata, flava, elytris macula communi scutellari, fascia lata postice obliqua suturam haud attingente ad medium, alteraque integra ante apicem nigris. Long. ·12.

Texas, Mr. Clark: one male. The fifth ventral segment is broadly emarginate, the anal segment has two long processes gradually dilated, and obliquely subtruncate at the extremity. This species is allied to A. trifasciata, but the markings are different.

Another species of Anaspis was found at Frontera by Mr. Clark, but it seems closely allied to others in my collection, and I have not yet fully made out its characters; I therefore prefer for the present not to suggest a name.

LYTTA Linn.

L. melaena, elongata, nigra, nitida, capite parce punctato, oblongo, gutta verticali obsoleta testacea, angulis posticis rotundatis, thorace parce punctato, oblongo, latitudine longiore, antice rotundato, elytris confertim intricato-rugosis, ad basin sublævibus; tibiis posticis calcari externo crasso oblique truncato, concavo; antennis extrorsum incrassatis, articulis globosis, ultimo vix longiore acuminato. Long. ·65—·8.

Sonora, Mr. Schott. Resembles in form L. nitidicollis, but differs by the color, by the finer sculpture of the elytra, and by the shorter and stouter antennæ. These in the male are as long as the head and thorax, with the 5th and 6th joints broader than the following; in the female they are a little shorter and uniformly thickened.

PHODAGA Lec.

Oculi ovales integerrimi, longitudinales; antennæ inter oculos insertæ, breves filiformes, compressæ, versus apicem attenuatæ, 11-articulatæ, articulis haud laxe articulatis, 1mo crasso obconico, 2ndo parvo sequente triplo breviore. Tarsi compressi spinulosi, subtus haud pubescentes; ungues fissi, parte inferiore breviore. Corpus alatum.

This genus bears a very close relation to Lytta, and has very nearly the outline of certain species (e. g. L. lemniscata) of that genus, except that the head is very much elevated, so that the vertex becomes conical, somewhat as in Rhipiphorus; the eyes, moreover, instead of being transverse and emarginate as in all Lyttæ, are longitudinal and oval; the antennæ are inserted between the eyes, and the front is therefore narrowed at that point. The mouth is a little more elongated, but I observe no character worthy of mention in the oral organs; the labrum is rounded in front. The antennæ are nearly as in L. lemniscata, but shorter, and with the joints less loosely articulated. The spurs of the posterior tibiæ are equal and slender; the ungues are double, but the inferior part is about one-third shorter than the upper, and is soldered to it, so as to form a large tooth, which does not descend abruptly as in Lytta erosa, but is rather as in L. elegans. The anterior femora are filiform and uniformly pubescent, having no trace of the slight inferior emargination and patch of sericeous hair seen in most species of Lytta.

P. alticeps, elongata, opaca atra, capite lateribus cinereo-pubescente, conoideo, vertice conico elevato, subacuto, fronte canaliculata, thorace campanulato, linea dorsali insculpto, ad basin medio impresso, elytris thorace duplo latioribus, minus profunde subtiliter scabris, sutura lineisque angustis quatuor indistinctis parum elevatis, calcaribus unguiculisque rufis. Long. ·58—·85.

Sonora, Mr. Schott. The thorax is not perceptibly punctured, and the front is marked with only a few scattered points. The middle tibiæ of the male are curved, much dilated, and very profoundly excavated along the inner face from near the base to the apex: the anterior legs are alike in both sexes, the posterior legs of the only male procured are wanting.

NEMOGNATHA Illiger.

N. discolor, luteo-testacea, nigro-villosa, thorace sat dense punctato, transverso, lateribus rectis, elytris dense subtilius punctatis, vitta utrinque lata nigro-picea antico abbreviata; antennis nigris, tibiis tarsisque infuscatis, calcaribus posticis obtusis concavis, externo paulo latiore. Long. ·37.

Texas, Mr. Haldeman, one specimen. Closely allied to N. piezata, but the under surface is of the yellow color as the upper, while that species is black beneath. Varieties of N. piezata were brought by Mr. Haldeman, in which the usual elytral vittæ are completely wanting.

N. longicollis, elongata, fusco-lutea, breviter nigra-pubescens, capite fusco, valde elongato, plano punctato, spatio frontali lævi, ore producto, thorace latitudine sesqui longiore, antice attenuato et utrinque late impresso, modice punctato, elytris thorace duplo latioribus, confertim rugose punctulatis, sutura margineque infuscatis; pectore obscuro, antennis nigris extrorsum paulo incrassatis, articulis arcte conjunctis; tibiis posticis calcaribus planis obtusis, interno latiore; maxillis corpore paulo breviores. Long. ·25.

Ringgold Barracks, Texas, Mr. Haldeman. This species belongs to the genus Gnathium of Kirby, but I do not think it necessary to retain it as distinct from Nemognatha. It may indeed be a variety of N. minima *Say*, (a species otherwise unknown to me), but differs considerably in color from the description given by him.

BRUCHUS Linn.

B. uniformis, oblongo-ovatus, fusco-ferrugineus, dense cinereo-pubescens, thorace latitudine longiore, antrorsum angustato, lateribus paulo concavis, sat dense grossius punctato, vitta dorsali pallidiore sæpius ornato, elytris haud vel vix tesselatis, striis angustis punctatis, antennis pedibusque flavo-testaceis cinereo-pubescentibus, illis extrorsum obscuris. Long. ·17—·20.

Colorado Desert. Abundant in the pods of Prosopis and Strombocarpus.

B. prosopis, oblongo-ovatus, fusco-ferrugineus, dense cinereo-pubescens, thorace fusco-pubescente, latitudine longiore, antrorsum angustato, lateribus paulo concavis, sat dense grossius punctato, lateribus vittaque dorsali interrupta pallidis, elytris striis angustis punctatis pube fusca pallidaque tesselatis, maculisque obscuris maioribus paucis versus latera ornatis; pygidio fusco pallidoque variegato, pedibus flavo-testaceis, antennis obscuris, ad basin testaceis. Long. ·15—·18.

Colorado Desert. Found with the preceding, which it greatly resembles, but differs from it in the color of the pubescence. In each the posterior femora are armed near the tip with one tooth and two small denticles.

B. desertorum, oblongo-ovatus, ferrugineo-testaceus, dense cinereo-pubescens, sæpe ferrugineo-nebulosus, fronte verticeque infuscatis, thorace latitudine haud longiore, antrorsum angustato, punctatis; elytra striis angustis profundis punctatis, sutura margineque sæpe subinfuscatis, pedibus antennisque testaceis. Long. ·08.

Colorado Desert. Also allied to the two preceding, and found on the same plants; it is however much smaller, but otherwise shows no special difference.

Apion Herbst.

A. oedorhynchum, brevius ovatum, virescente nigrum, parce tenuiter cinereo-pubescens, rostro cylindrico curvato, capite thoraceque fere longiore opaco, pone medium subsubito crassiore, fronte subtiliter striata, thorace opaco latitudine haud breviore, lateribus vix rotundatis, dense cribratim punctato, postice canaliculato, elytris ovatis valde convexis, striis profundis punctatis, interstitiis subtiliter dense rugulosis, antennis pone rostri medium insertis. Long. ·05.

San Diego, California, one specimen. Quite distinct from any other species known to me.

A. ventricosum, brevius ovatum, nigrum vix virescens, glabrum, rostro cylindrico, thorace paulo longiore, punctatum, versus apicem subnitidum, capite opaco, fronte medio sulcata, thorace opaco, latitudine longiore, lateribus subsinuatis, biimpresso, cribrato, postice canaliculato, elytris ovatis convexis, thorace triplo latioribus, sulcis profundis punctatis, interstitiis dense subtiliter rugulosis, antennis ad rostri basin insertis. Long. ·06.

One specimen, Fort Yuma, California. The impressions of the thorax are near the side, and a little before the middle.

Cleonus Schönh.

C. molitor, niger, pube decidua farinosa alba plus minusve dense vestitus, parceque brevissime pilosus, capite thoraceque variolosis, interstitiis dense punctulatis, rostro nec canaliculato, nec cristato, thorace parum breviore, hoc latitudine paulo longiore, lateribus rectis, prope apicem rectangulariter angulatis, et usque ad apicem constrictis, max ante medium utrinque transversim vage impresso, elytris thorace latioribus, dense punctulatis, striatim punctatis, interstitiis parce nigro-punctatis, pedibus antennisque valde albo-pubescentibus, his articulis arcte conjunctis, 2ndo et 3io sequentibus paulo longioribus. Long. ·7.

Vallecitas, California, Fort Yuma and Sonora. This is the largest species in my collection; it belongs near C. angularis *Lec.* (Beckwith's Exped.), although the first joint of the funiculus of the antennæ is not longer than the second.

Lixus Fabr.

L. pleuralis, valde elongatus, niger sat dense cinereo-pubescens, thoracis lateribus elytrorumque vitta laterali densius albo-pubescentibus, thorace antrorsum angustato, lateribus late rotundatis ad basin profunde excavato, elytris versus scutellum impressis, dense punctulatis, punctisque quadratis striatim positis, ad apicem brevissime singulatim acuminatis; rostro cylindrico recto punctato, thorace sesqui breviore. Long. ·34.

One specimen found on the Colorado River below the Gila.

L. laesicollis, elongatus niger dense punctulatus, tenuiter irregulariter cinereo-pubescens, thorace profunde cribrato, latitudine haud longiore, lateribus postice subparallelis, antice rotundatis, ad apicem subtubulato, postice profunde haud late excavato, elytris versus scutellum impressis, ad apicem rotundatis, subtilius punctulatis, punctis oblongis striatim positis; rostro cylindrico paulo deflexo, nitido parce punctato, ad basin foveato, thorace haud breviore. Long. ·45.

Eagle Pass, Texas; Mr. Schott; one specimen. The punctures of the thorax are not confluent, but are longer and deeper than in any other species in my collection.

ANTHONOMUS Germ.

A. **fulvus**, oblongus, læte fulvus nitidus, thorace latitudine breviore, antrorsum angustato, et lateribus rotundato, ad apicem subtubulato, confertim profundissime cribrato, et parce piloso, linea dorsali pilis longioribus pallidis cristata; elytris profunde crenato-striatis, interstitiis punctis pilisque paucis notatis, annulo postico subtriangulari densius pallide pubescente utrinque signatis; femoribus acute dentatis, rostro sulcato et punctato, ad apicem lævi, antennarum clava fusca. Long. ·17.

Ringgold Barracks, Mr. Haldeman. The anterior femora are armed with a small tooth near the apex, besides the large acute one.

A. **scutellaris**, oblongus, nigro-piceus, tenuiter cinereo-pubescens, rostro rugose punctato, carinato ad apicem lævi, capite confertim, thorace grossius dense punctatis, hoc lateribus et ad medium fulvo-piloso, latitudine breviore, lateribus postice parallelis antice subito rotundatis, ad apicem tubulato; elytris punctato-striatis, interstitiis planis pilis nigris tesselatis, lateribus parallelis, scutello dense pallide piloso; femoribus dente magno acuto armatis. Long. ·17—·20.

Found by Mr. Haldeman in Texas, and by me in Georgia.

BARIDIUS Schönh.

B. **mucoreus**, oblongus elongatus, niger dense cinereo-pubescens, thoracis macula utrinque ad angulos posticos, scutelloque nigris nudis; thorace latitudine fere longiore, lateribus rectis fere parallelis, antice subito convergentibus et rotundatis. Long. ·18.

One specimen found near Fort Yuma. Exactly resembles our very abundant B. **trinotatus** *Say*, except in the form of the thorax, which instead of being obliquely and gradually rounded on the sides, is nearly parallel, with the curvature in front.

B. **densus**, niger opacus, oblongo-ovalis, pilis parcis cinereis brevissimis subpruinosus, capite antice punctato, rostro confertim punctato, thorace haud breviore, curvato, ad basin transversim impresso, thorace dense cribrato, latitudine haud longiore, antrorsum sensim recte, dein magis et curvatim angustato, ad apicem subconstricto, linea dorsali tenuissima lævi; elytris pone humeros sensim angustatis, striis exaratis punctatis, interstitiis planis valde punctatis; antennis validis, articulo funiculi primo elongato. Long. ·14.

San Diego, California.

B. **carinulatus**, oblongo-ovalis, niger nitidus, rostro punctato, thorace multo breviore crasso, curvato ad basin transversim impresso, capite parce punctulato; thorace latitudine breviore antrorsum paulo et recte, dein fortius curvatim angustato, ad apicem haud constricto, cribatim in lateribus rugose punctato, linea dorsali angusta subelevata lævi; elytris striis exaratis vix punctatis, interstitiis striis paulo latioribus, fortius præcipue uniseriatim punctatis; antennis validis, funiculi articulo primo elongato. Long. ·17.

Texas, Mr. Haldeman, one specimen. The punctures of the second and third and some of the outer intervals of the elytra are irregular; the others are placed in single rows.

CRATOSOMUS Sch.

C. **gemmatus**, niger opacus, undique subæqualiter fulvo-pubescens, rostro glabro nitido subdepresso, thorace longiore subarcuato, extrorsum parce punctulato, ad basim punctato et subcarinato, fronte canaliculata, thorace

latitudine breviore, ante medium rotundatim valde angustato, ad apicem vix tubulato, tuberculis nitidis glabris convexis dispersis (quorum unus ante medium dorsali magis acutus); elytris ad basin thorace tertia parte latioribus, convexis ad apicem rotundatis, antice grosse striatim punctatis postice striatis, interstitiis omnibus tuberculis nitidis ornatis postice evanescentibus. Long. ·82.

Tampico, Mr. Haldeman, one specimen. The tubercles of the interstices of the elytra are less numerous, and indeed almost wanting towards the apex; the 5th has only three, all of which are in front of the middle. The first to third joints of the funiculus of the antennæ are equal, the fourth and fifth are each a little shorter, and the sixth and seventh are still shorter and thicker.

SPHENOPHORUS Schönh.

S. validus, ater opacus subvelutinus, capite rostroque parce punctato, fovea frontali profunda, thorace subtiliter parce punctato, dorso postice subdepresso, latitudine parum longiore antice magis angustato, lateribus rotundatis, ad apicem subito tubulatim constricto; elytris tenuiter striatis, striis internis ad basin parce punctatis, externis obliteratis, sed punctis majoribus notatis; pygidio grosse punctato- subcarinato; tarsis articulo 3io latissimo transverso subtus spongioso, 1mo et 2ndo subtus excavatis glabris. Long. ·97.

One specimen brought from Sonora by Mr. Schott. Differs from the next by the larger size, the sudden constriction of the apex of the thorax, which is less gradually narrowed in front, aud by the subcarinate pygidium. The rostrum is longer than the thorax, cylindrical, and bent especially near the extremity.

S. procerus, ater opacus subvolutinus, capite rostroque parce punctato, fovea frontali profunda, thorace dorso postice subdeplanato, latitudine paulo longiore, antice sensim angustato, lateribus rotundatis ad apicem subtubulato, ad parum constricto; elytris omnino sicut in S. valido: pygidio grosse punctato haud carinato; tarsis sicut in priore. Long. ·65—·82.

San Diego, California; under decaying Opuntiæ. The beak of the male is a little shorter than that of the female; in the latter, it is as long as the thorax, cylindrical and regularly curved.

S. pictus, elongato-ovalis, supra niger nitidus, capite fascia postocular; pallida, thorace latitudine sesqui longiore, antrorsum sensim angulato, ad apicem tubulato, vittis dorsalibus duabus punctatis albidis postice vage impressis, lateribus parce punctatis late albidis, margine plus minusve nigro; elytris a humeris postice attenuatis, striis internis profundis haud punctatis, externis e punctis compositis, interstitiis planis vix parce punctulatis, 2ndo albido uniseriatim punctulato, 4to et 6to ad basin vittaque lata submarginali antice abbreviata albidis; subtus albidus, medio niger, pedibus variegatis, tarsis subtus lateribus spongiosis, articulo 3io dilatato; rostro cylindrico thorace parum breviore. Long. ·7.

One specimen; Vallecitas, San Diego County, California. The black portions on the under surface are: a large metasternal spot, and another abdominal, the latter is narrowed on the first segment, so that it becomes of the form of the abdomen of an ant. The coxæ are black with a pale margin, the femora are pale, with an elongate spot each side not reaching the tip: the tibiæ are black, with the outer edge pale. This species must be placed in Schönherr's second division near S. discolor, *Mann.*, which by error has been described as having the third tarsal joint spongy beneath; it is so only at the sides, and the middle is entirely glabrous. In the present species the terminal internal tooth of the anterior tibiæ is long and oblique, and immediately above it is a smaller tooth.

S. ochreus, elongato-ovalis, pallide fusco-ochreus, rostro cylindrico, antice nigro, vertice nigro, fronte foveata, thorace latitudine longiore, antrorsum sensim parum angustato, ad apicem tubulato-constricto, parce punctato, dorso subbisulcato, in fundo parcius grosse punctato, linea media dorsali, altera

utrinque pone medium interrupta, margineque abbreviato nigris, nitidis; scutello nigro, elytris striis foveatim punctatis, interstitiis parce punctulatis, alternis latioribus nitidis, puncto humerali nigro, coxis macula magna abdominali epipleuris commissurisque nigris; tarsis articulo 3io dilatato, lateribus spongioso. Long. ·56.

Sonora, Dr. Webb, one specimen. Resembles in appearance a species found in the Atlantic States, but differs by the thorax being more uniformly punctured, as well as by the black dorsal vittæ.

S. vomerinus, ovalis, sordide ater opacus, fronte foveata, thorace dense punctato, linea dorsali angustissima subnitida, latitudine haud longiore, lateribus rotundatis, antice angustato, et tubulato; elytris a humeris angustatis, striis profundis, internis parum, externis foveatim punctatis, interstitiis confertim punctatis; tarsis articulo 3io haud dilatato, tibiis anticis angulo externo apicali quadratim producto; rostro compresso ad basin subito dilatato et punctato. Long ·35—·42.

Sonora, Dr. Webb. Of the form and size of S. retusus, but very distinct. The anterior tibiæ are terminated by the usual internal acute tooth, above which is a small one, and again at the middle an obtuse angle: the outer angle, however, instead of being obliquely rounded as usual, is produced into a broad truncate process. The third joint of the tarsi is very slightly dilated, and they are merely ciliate at the sides.

Rhyncolus Kreutzer.

R. dorsalis, elongatus cylindricus, niger nitidus, capite punctato, rostro capite breviore deplanato, tenuiter canaliculato, thorace capite parum latiore latitudine longiore, antrorsum sensim paulo angustato, ad apicem transversim impresso, sat dense punctato, linea dorsali lævi, elytris striis crenatis, interstitiis paulo convexis, antennis validis, clava oblonga funiculo vix latiore. Long. ·10.

One specimen, San Diego, California.

R. angularis, cylindricus, niger nitidus, capite parce punctato, rostro deflexo, medio parce lateribus densius punctato, capite vix breviore, ad apicem vage angulatim impresso, thorace latitudine longiore, grosse punctato, antrorsum sensim paulo angustato, lateribus rectis, ad apicem subito parum constricto, angulis pone apicem obtusis at distinctis; elytris punctis quadratis profundis striatis, interstitiis convexis, uniseriatim punctatis; pedibus antennisque piceo-rufis, his clava oblonga rufa, funiculo duplo latiore. Long. ·08—·10.

Under willow bark, at New River, Colorado Desert.

Hylesinus Fabr.

H. hystrix, cylindrico-ovalis, crassus nigro-piceus, setis brevibus erectis pallidis vestitus, punctatus, elytris margine basali fortius elevato, punctis quadratis striatis, interstitis 2ndo postice late sulcato, 3io ante apicem valde elevato, tridentato. Long. ·09.

San Diego, California, one specimen. By the curious posterior sculpture of the elytra a broad and deep excavation is produced: the club of the antennæ as in the other species is distinctly annulated.

Mallodon Serv.

M. gnatho, depressus, nigro-piceus nitidus, capite rude et confluenter cribrato, subcanaliculato, thorace transverso, parce punctato, medio late lconcavo et punctis paucis magnis insculpto, versus latera cribrato, inæquali, ateribus parallelis serrulatis, angulis posticis oblique late emarginatis, elytris fortiter marginatis vix rugulosis; mandibulis maris elongatis pone apicem dente magno armatis, intus parce pilosis. Long. 1·35.

One male from Sonora, Dr. Webb. Of the form of the male of M. dasystomus, but readily known by the thorax not being marked with bright facets separated by opake spaces, also by the posterior angles being obliquely but broadly emarginate, so that a prominent angle is formed before the base, and another at the base itself, and finally by the more slender mandibles having a strong tooth near the tip, and being only sparsely pilose internally. The under surface of the head is much more deeply excavated than in M. dasystomus, and the gular margins much more elevated; the genæ are broadly rounded with one subacute angle, while in the other they are emarginate.

ELAPHIDION Serv.

E. validum, fusco-piceum nitidum, fusco-pubescens, et parce pilosum, thorace latitudine haud breviore, lateribus rotundatis postice angustato, fortius punctato, dorso subdepresso quinque calloso, macula magna sericeo-pubescente laterali utrinque antica, elytris parcius postice subtilius punctatis, ad apicem subtruncatis, sutura spinosa, antennis corpore brevioribus ad basin crassiusculis, articulis 3—6 apice breviter unispinosis, femoribus muticis. Long. ·83—1·0.

Texas, Messrs. Haldeman and Schott. The sericeous patch of yellowish hair each side of the thorax in front recalls the European genus Stromatium.

E. protensum, elongatum, fusco-piceum, tenuiter parce cinereo-pubescens, thorace latitudine longiore, antice posticeque angustato, lateribus subangulatim rotundatis, rude punctato, transversim subplicato, callo dorsali nitidiore subelevato, scutello dense pubescente, elytris thorace latioribus, antice fortiter, postice subtilius punctatis, ad apicem longe bispinosis, femoribus ad apicem spinosis, antennarum articulis 3—6 spinis sensim brevioribus armatis. Long. 1·22.

One female found in Sonora by Mr. Schott. The form is about proportioned as in E. parallelum. This species is very conspicuous by its large size.

ERIPHUS Serv.

E? ruber, læte coccineus, nitidus, pilis erectis nigris parce vestitus, elytris grosse modice punctatis, postpectore nigro, antennis extrorsum, tarsisque fusco-nigris, (antennis tibiarumque apice rare nigris). Long ·4—·42.

Eagle Pass, Mr. Schott. Resembles E. suturalis, so closely, that I was for a time unwilling to consider it as distinct. The size is much greater, and the punctures of the elytra more numerous and comparatively smaller: the basal joint of the antennæ, except in one specimen, is red; a character I have never observed in E. suturalis.

ARHOPALUS Serv.

A. eurystethus, ferrugineus, subtus dense pallide sulphureo-pubescens, thorace fusco, dense sulphureo-pubescente, transverso, ad basin declivi, lateribus rotundatis ante basin angulatis, elytris fuscis piceo-pubescentibus, fascia lata dentata ad quadrantem, linea angulata ad medium, fascia lata pone medium et linea angulata pallide sulphureis ornatis, ad apicem singulatim longe acuminatis; pedibus late distantibus, prosterno postice subproducto, late subtruncato. Long. ·58—.80.

Sonora, Mr. Schott. The lateral angle of the thorax is sometimes distinct, sometimes indistinct, never acutely prominent as in A. erythropus. This species belongs to a group in which the anterior feet are widely separated, the prosternum broadly and slightly produced posteriorly, and the mesosternum suddenly declivous in front, thus exhibiting a tendency to Megaderus, which with the Trachyderides should immediately follow this group in a natural arrangement.

CROSSIDIUS Lec.

C. suturalis, fulvus, subtilius flavo-pubescens, capite, antennis, postpectoris lateribus, pedibus thoraceque supra nigris, hoc latitudine paulo breviore, subrotundato, opaco vage grosse et subtilius punctato, subinæquali, lateribus obtuse angulatis, margine basali ad latera valde prominulo; elytris antice fortiter postice subtilius et dense punctatis, vitta suturali communi, antice angusta, postice dilatata nigris, spina suturali parva armatis, scutello nigro. Long. ·62.

One female found in Sonora by Mr. Schott. This species has entirely the form of C. testaceus, but the elevated lines of the elytra are hardly distinct, and the punctures of the elytra anteriorly are smaller, and finally the suture terminates in a small spine. The black disc of the thorax does not reach the sides, so that a yellow margin is seen each side; the dilated portion of the black sutural vitta extends backwards from the anterior third forming a very elongate oval black spot.

TRAGIDION Serv.

T. annulatum, nigrum velutinum, thorace lateribus postice fortiter angulatis, elytris fulvis ad basin late nigris, antennarum articulis duobus primis nigris, reliquis fulvis ad apicem nigris. Long. 1·1.

One male, Sonora, Mr. Schott. Very different from T. coquus and its varieties by the color of the antennæ: the lateral angle of the thorax is more prominent, and the two small horns between the antennæ are longer, more compressed and more rounded at the tip: the third and fourth joints of the antennæ are very densely clothed at the tip with black hair.

RHOPALOPHORUS Serv.

R. rugicollis, plumbeus, pube subtili depressa cinerea pruinosus, thorace rufo, latitudine sesqui longiore, antrorsum paulo angustato, lateribus late rotundatis, dorso subglabro, transversim plicatim rugoso et punctato, elytris profunde punctatis ad apicem truncatis. Long. ·38.

One specimen, Texas, Mr. Haldeman. This species has the same color and general proportions as R. longipes (*Stenocorus longipes* Say), but differs by the form and sculpture of the thorax.

CLYTHRA Fabr.

C. militaris, oblonga subelongata, nigro-virescens, capite opaco rugose punctato, thorace brevi opaco, ad latera transversim biimpresso, elytris subnitidis punctatis, macula magna obliqua basali alteraque rotundata subapicali rubris, illo puncto humerali nigro signato. Long. ·17.

One specimen, New Braunfels, Texas, Mr. Lindheimer. Seems by the large and prominent anterior coxæ to belong with the group Anomoia.

MEGALOSTOMIS Lac.

M. mucorea, oblonga, convexa, nigra, undique æqualiter dense albopubescens, confertim subtilius punctata, elytris macula humerali magna rufa; antennis articulo 3io parvo testaceo, 4to triangulari longiore. Long. ·25—·28.

Vallecitas and Fort Yuma, California. Differs from any described by Lacordaire by the uniform dense pubescence. It seems however to belong to his first division Minturnia, and to find its place near M. dimidiata.

BABIA Lac.

B. tetraspilota, breviter ovata, postice latior, nigra nitida, subtus cinereo pubescens, supra glabra, capite lævi, thorace parce punctato, antrorsum sensim angustato, lateribus subrectis, transversim valde convexo, elytris striatim punctatis, macula magna obliqua humerali postice latiore, alteraque subapicali rotundata rubis. Long. ·11.

Fort Yuma, California; one specimen. Differs from our common species by the smaller size, narrower thorax and by the humeral spot of the elytra being wider behind, and trapezoidal.

CRYPTOCEPHALUS Geoffroy.

C. spurcus, subcylindricus, fusco-badius nitidus, capite pedibusque flavis, thorace convexo parce subtilius punctato, lateribus, margine antico, maculisque duabus baseos pallide flavis; elytris pallide flavis, piceo-subvittatis, striis profundis punctatis, interstitiis vix convexis nitidis; subtus flavo-guttatus, prosterno apice acuto haud carinato, postice emarginato, lobis acutis. Long. ·17—·23.

Var. fere totus pallidus, antennis versus apicem punctisque elytrorum solis fuscis.

San Diego, California. Similar in appearance to C. incertus, but larger, and having the prosternum prominent in front. The striæ of the elytra are quite as deep as in that species, but the interstices are less elevated: between the third and penultimate striæ, which as usual unite around the apex, are four intermediate striæ uniting by pairs; in the space between the outer two, just behind the humerus, are two short striæ each consisting of three or four points. The dark color on the elytra is seen in the punctures of the striæ, at the tips of the loops formed by the striæ, at the middle and base of the third and fifth intervals, on the humerus, and along the outer margin. When the under surface is dark colored, the sterna, the pleuræ of the mesothorax, the middle of the base of the abdomen, and the last ventral segment are yellow: the pygidium is yellow, with large brown punctures; the legs are yellow, the middle of the thighs and tibiæ being sometimes reddish, and the tarsi fuscous. The under surface is almost glabrous and moderately punctured. Of the type were procured two males, and of the variety two females.

PACHYBRACHYS Suffrian.

P. livens, elongatus oblongus, pallide sulphureus, punctis testaceis insculptus, thorace latitudine sesqui breviore, æqualiter fortiter minus dense punctato, lateribus rectis, antrorsum paulo angustato; elytris pone scutellum et mox ante medium impressis, striatim punctatis, punctis versus scutellum confusis, pedibus antennisque concoloribus, oculis nigris. Long. ·13.

Colorado River, California, on Salix. This species belongs to the numerous group of indefinite species such as P. abdominalis, tridens, sobrinus, &c., but differs from the others by the paler color. The striæ of the elytra are impressed only behind the middle; the rows are regular, but closer than usual, and are confused towards the suture, where the elytra are irregularly and densely punctured. The middle of the disc of the thorax is usually marked with a large testaceous spot.

P. caelatus, elongatus oblongus, supra luteus, fusco-variegatus, thorace fortiter inæqualiter punctato, fusco-trimaculato, elytris striatim profunde punctatis, striis internis sinuatis et abbreviatis, haud confusis, interstitiis hic inde callosis; subtus nigro-piceus, abdomine flavo-marginato, pedibus testaceis, femoribus flavo-maculatis. Long. ·12—·14.

San Diego and Fort Yuma, California. The head has a vertical line and the occiput blackish. The paler parts of the thorax are less densely punctured, and in one specimen the dark spots are confluent forming an M shaped figure. The three internal striæ of the elytra are contorted, and some of them are usually abbreviated, and behind the middle one of the intervals is usually broader and more elevated: a few confused punctures are seen here and there, but the striæ are not lost as in the preceding. The pygidium is yellow with three dark spots. This species greatly resembles P. abdominalis, but the dark spots of the thorax are more densely punctured, and the striæ of the elytra are more sinuous.

Colaspis Fabr.

C. humeralis, ovalis convexus, nigro-cupreus nitidus, capite thoraceque parcius punctatis elytris minus dense punctatis lineis dorsalibus utrinque duabus sublævibus, intra humeros profunde breviter impressis, palpis antennisque basi testaceis. Long. ·15.

Texas, Mr. Haldeman ; one specimen. Resembles in form and size C. viridis Fabr., but differs by the thorax not being aciculate, but only sparsely punctured ; it differs from a species found in Georgia by the dark colored legs. The punctures of the elytra form irregular rows, but two intervals on each elytron are more obvious by their regularity ; the intra-humeral impression is deeper than usual. This species belongs to the division of the genus having the first joint of the tarsi not elongated, the claws with a broad basal process, and the antennæ slightly thickened externally.

Metachroma Lec. (¡Chevr.)

M. ustum, longiusculum, fusco-castaneum, nitidum, capite thoraceque parcius punctatis, hoc latitudine duplo breviore, convexo, lateribus rotundatis marginatis, angulis parvis auriculatis, elytris thorace latioribus, antice leviter striato-punctatis, ad marginem et apicem indeterminate rufo-testaceis, ore capitisque maculis rufo-piceis, antennis pedibusque rufo-testaceis ; femoribus dente minuto armatis. Long. ·22.

Sonora, Dr. Webb. As large as M. interruptum (*Colaspis interrupta*, Say), and resembling it in sculpture, except that the striæ are more distant. The species to which I desire to restrict the name Metachroma, are those congeneric with Colaspis quercata *Fabr.*, the first species mentioned in Dejean's Catalogue. They have the mouth free beneath, the thorax not lobed behind the eyes, which are large and prominent, the anterior coxæ occupying nearly the whole of the prosternum ; the antennæ widely separated, slender, with the joints 7–11 very slightly dilated, and the second and third equal. The femora are moderately incrassated, scarcely perceptibly dentate ; the posterior tibia are externally obliquely emarginate near the tip, and finally the ungues are acutely toothed or even bifid.

M. suturale, piceo-nigrum nitidum, capite thoraceque parcius punctatis, thorace latitudine duplo breviore, medio convexo, lateribus subexplanatis valde rotundatis marginatis, angulis parvis auriculatis, elytris punctato-striatis thorace latioribus, rufo-testaceis, vitta lata communi suturali nigra, ore, antennis, tibiis ad apicem et basin, abdomineque ad apicem et latera piceo-rufis ; femoribus dente minuto armatis. Long. ·24.

Texas, Mr. Haldeman. Related to the preceding, but differs in the arrangement of the colors. As in it, the head is less punctured at the middle, and has two vertical faint reddish spots.

M. puncticolle, nigro-piceum, capite piceo-rufo, fronte punctata, occipite obscuro, thorace transverso, lateribus rotundatis, angulis minutis auriculatis, linea postica dorsali tenui lævi, elytris testaceis striatim punctatis, punctis postice obliteratis, sutura usque ad dodrantem nigra antice latiore ; antennis pedibusque testaceis, femoribus omnino muticis. Long. ·17.

One specimen from Fredericksburg, Texas, Mr. Haldeman.

Eumolpus Fabr.

E. cuprascens, oblongus convexus, cupreus vel aureo-cupreus, nitidus, fortiter subrugose punctatus, breviter fere erecte albo-pubescens, antennis ad basin piceis, ore tibiis tarsisque nigris, elytris thorace latioribus. Long. ·2.

San Diego, California. Belongs to the same genus as E. smaragdulus *Lec.*, Pac. R. R. Survey, 9, (insects) 67, but differs from it by the color and more robust form. The generic characters are : thorax margined on the sides, lobed broadly behind the eyes, head not sculptured with lines, antennæ slender ; femora and tibiæ unarmed, ungues bifid.

PARIA Lec.

P. quadriguttata, supra pallide testacea nitida, capite parce punctato, thorace convexo parce punctato, lateribus rotundatis angulis posticis haud rotundatis, margine basali apicalique infuscatis, elytris thorace latioribus convexis, fortiter striatim punctatis punctis postice parvis, macula utrinque subbasali, alterisque duabus linearibus confluentibus ad medium ornatis; subtus picea, abdominis margine pedibusque pallide testaceis, antennis testaceis ad apicem infuscatis. Long. ·17.

Fort Yuma, California. Closely resembles Colaspis 6-notata *Say*, but is more slender, with the thorax less punctured, and the under surface darker.

The genus PARIA is established for the present species, Col. 4-notata *Say*. 6-notata *Say*, aterrima *Oliv.*, and canellus *Fabr.*, with several nondescripts. The species mentioned, which were known to Dejean, were placed by him at the end of the genus Metachroma, with the first mentioned species of which they have no affinity, except that resulting from form. They are to be distinguished as follows:

Body glabrous, head not sculptured, antennæ distant, slender, second joint thicker, but shorter than the third; thorax margined, angles not auriculated. beneath broadly lobed behind the eyes, prosternum deflected and hollowed so as to protect the mouth when the head is bent down. Femora not toothed. posterior tibiæ externally broadly emarginate near the tip; ungues bifid.

MYOCHROUS (†Chevr.)

M. longulus, elongatus nigro-piceus, dense punctatus, squamulis æneofuscis densissime tectus, thorace latitudine longiore, lateribus subparallelis fortiter tridentatis, antice oblique truncatis, angulis omnibus prominulis. Long. ·2.

Fort Yuma, California. Different from our other species by the form of the thorax, and the more elongate body.

HALTICA Fabr.

H. fumata, ovalis supra flava, ore occipiteque fuscis, thorace lævi, latitudine duplo breviore, lateribus obliquis subrectis, macula media antice latiore nigra, alteraque utrinque obliqua fusca; elytris subtilissime parce punctulatis, sutura vitta discoidali alteraque submarginali nigris; corpore subtus, pedibus antennisque fusco-nigris, femoribus anterioribus fusco-testaceis. Long. ·26.

Texas and New Mexico. Smaller and broader than H. alternata, and distinct from that as from all allied species in my collection, by the dark color of the under surface. The dorsal thoracic spot in one specimen is divided.

H. pura, elongato-ovalis flavo-testaceus, labro, occipite, antennis tarsisque nigris, thorace latitudine sesqui breviore, lateribus late rotundatis, subtiliter punctulato, antice guttis duobus vel quatuor nigris; elytris subtiliter rugosis et vix conspicue punctulatis, sutura vitta dorsali alteraque submarginali tenuibus nigris. Long. ·28—·31.

Colorado River, California. More slender than H. pluriligata *Lec.* and distinguished by the uniform yellow color of the under surface.

H. foliacea, elongata subovalis, viridiænea subnitida, thorace latitudine parum breviore, antrorsum angustato, subtiliter punctulata, linea transversa subtili postice inculpto, elytris punctulatis thorace parum latioribus. Long. ·19.

Texas, Mr. Haldeman. Closely allied in form and character to H. punctipennis *Lec.* (Beckwith's Expedition), but the thorax is less transverse and more densely punctulate, the posterior line is not more distinct at the middle than towards the side, and the elytra are more finely punctured.

H. opulenta, oblonga convexa laete viridiaurea, capite antice rugoso et punctato, postice lævi, thorace rude punctato, et parce punctulato, latitudine breviore, lateribus vix late rotundatis, angulis anticis oblique truncatis, disco

postice sulco profundo transverso striola basali utrinque terminata exarata, elytris fortiter striatim crenatis, interstiis parce punctulatis, antennis pedibusque rufo-testaceis. Long. ·10.

Fort Yuma, California. Entirely of the size, form, and sculpture of H. helxines (var. nana *Say*), but the sides of the thorax are less rounded in front behind the apical angles.

H. mitis, elongata, capite fortius punctato, fusco-testaceo, medio sublævi, thorace pallido, latitudine parum breviore, lateribus nigris antice rotundatis, parce subtiliter punctulato et parcius punctato, prope basin linea transversa vage impressa; elytris punctulatis, obscuris, vitta dorsali apicem haud attingente, margineque postico pallidis, ore postpectoreque nigro-piceis, antennis fuscis, abdomine fusco-testaceo, pedibus testaceis plus minusve infuscatis. Long. ·15.

Colorado River, California. Very nearly resembles H. blanda (*Systena blanda* Mels.), but the head is more punctured and the elytra are less densely punctulate.

H. ochracea, elongata, supra ochreo-flava nitida, capite antice parce punctato, thorace latitudine breviore punctulato et parce punctato, antrorsum angustato, lateribus rectis postice linea transversa vage impresso, elytris subtilius punctulatis, subtus fusca, antennis pedibusqne testaceis. Long. ·15.

One specimen, San Diego, California. This specimen, with the preceding belongs to the group named Systena by Mr. Chevrolat, but is very different from any other in my collection.

Longitarsus Latr.

L. mancus, apterus elongatus, subcylindricus, æneo-niger, capite lævi, thorace punctato latitudine breviore, lateribus late rotundatis, elytris thorace parum latioribus, punctatis, ad apicem divergentibus et singulatim rotundatis, ano prominulo, pedibus antennisque rufo-piceis, his articulis 2ndo tertioque æqualibus. Long. ·07.

Gila River, below the Pima villages. The form is nearly that of L. testacea (*Teinodactyla testacea* Mels.) but the absence of wings, and the separately rounded elytra are characters known to me only in this and the next species.

L. apterus, apterus, elongatus subcylindricus, convexus æneo-niger, capite lævi, thorace versus latera parce punctulato, latitudine breviore, lateribus late rotundatis, elytris thorace parum latioribus punctatis, ad apicem divergentibus et singulatim rotundatis, ano prominulo, pedibus antennisque testaceis, his extrorsum fuscis, articulis 2ndo 3ioque aqualibus, femoribus posticis fuscis. Long. ·05—·07.

Found with the preceding, which it resembles, except in having the thorax only finely punctured towards the sides.

L. repandus, alatus, flavo-testaceus nitidus, thorace latitudine breviore, subtilissime parce punctulato et ruguloso, lateribus late rotundatis snbrepandis, elytris thorace sesqui latioribus, oblongo-ovalibus convexis, punctulatis et transversim subrugosis, antennis elongatis versus apicem paulo infuscatis. Long. ·07.

San Diego, California.

L. livens, alatus, supra flavo-testaceus nitidus, thorace latitudine breviore, subtiliter punctulato, lateribus late rotundatis, elytris thorace paulo latioribus, elongatis ovalibus, sat dense subtilius punctatis, antennis elongatis versus apicem parum infuscatis; subtus fuscus, pedibus testaceis. Long. ·07.

One specimen, Fort Yuma, California.

Psylliodes Latr.

P. interstitialis, ovalis paulo convexus, nigro-æneus nitidus, capite thoraceque fortius haud dense punctatis, hoc latitudine breviore, lateribus rectis angulis anticis oblique truncatis, elytris thorace latioribus, striatim punctatis,

interstitiis fortius subtiliter punctatis, antennis pedibusque piceo-testaceis, femoribus posticis nigro-æneis. Long. ·12.

Fort Yuma, California, one specimen. The striæ of the elytra in this species are formed merely of punctures, as in P. convexior *Lec.*, Pac. R. R. Survey, 9, (insects) 69, but the intervals are strongly punctured as in P. puncticollis *Mels.*

Diabrotica († Chevr.)

D. tenella, elongato-ovata, pallide virescente-flava nitida, thorace latitudine haud breviore, bifoveato, lateribus subsinuatis, ore occipiteque fuscis, elytris guttis utrinque sex parvis nigris, 2, 2, 2 positis; scutello postpectore pedibusque fuscis, femoribus pallidis ad apicem infuscatis, antennis fuscis, articulis tribus primis pallidis, Long. ·2—·22.

Fort Yuma, California, Resembles D. 12-punctata, but the spots are always very much smaller, and the thorax is not transverse, and not much rounded on the sides near the apex, and all the angles are prominent.

D? fossata, elongata, nigra nitida, vertice profunde foveato, thorace latitudine haud breviore, foveis magnis duabus profunde excavato, lateribus subsinuatis, elytris subtiliter punctatis, plica versus marginem munitis, postice obsoleta introrsum sulco lata utrinque abbreviato definita. Long. ·21.

New Baunfels, Texas, Mr. Lindheimer. An immature specimen is dark testaceous; this species is of the same form as D. longicornis *Say* (Galleruca,) but the elytra are less strongly punctured.

Galleruca Geoffroy.

G. sordida, testacea, dense pallide sordide pubescens, capite canaliculato, thorace brevi, lateribus subangulatis, profunde canaliculato, utrinque late excavato, elytris subtrisulcatis, sulco secundo antice introrsum obliquo, tertio utrinque valde abbreviato, macula communi nigra suturali paulo impressa ad medium notatis, guttisque pluribus præcipue pone medium ornatis; antennis corporis dimidio brevioribus extrorsum paulo incrassatis, pectore fusco. Long. .13.

Fort Yuma, California. Related to G. guttulata *Lec.* Pac. R. R. Survey, 9, (insects) 70, but more finely punctured, and still more densely pubescent, so that the punctures are not visible. The grooves of the elytra are also different; the first is entire, but is a little deeper at the sutural black spot, the second runs obliquely inwards from the humerus, and forms a deep fovea near the first, then it runs parallel with the suture, but is faint; the third is very faint and short, being seen only about the middle.

G. luteocincta, elongata, thorace brevi flavo, lateribus subangulato, utrinque oblique excavato, minus dense punctato, cyaneo-trimaculato, elytris æneo-cyaneis, vel æneo-viridibus, sericeis pubescentibus, densissime punctulatis, limbo externo et apicali flavo, subtus cum pedibus fusco-nigra vel testacea, antennis elongatis fuscis. Long. ·32–·43.

San Diego, California; very abundant on a species of Artemisia. This species varies much in size and color; the head is usually dull testaceous, with the occiput blackish or greenish blue; sometimes the head is entirely blackish. It is closely related to G. flavolimbata *Mann.* from northern California, but differs by the thorax being broadly and deeply excavated each side, and again less deeply at the middle near the base and apex: in G. flavolimbata there is but one deep excavation, which extends transversely across the thorax. In one specimen the elytra are dull testaceous, having only a scutellar patch, and an external vitta olive green bronzed. In another, the black spots of the thorax cover nearly the whole surface.

Exochomus Redt.

E. texanus, rotundatus valde convexus, fere compressus, niger nitidus, capite obscure rufo, thorace prope angulos anticos ad marginem rufescente, elytris subtiliter punctulatis, macula rotundata ante medium utrinque ornatis, pectoris segmentique abdominis primi lateribus rufis; pedibus rufis, tarsis omnibus, tibiis posterioribus, femorumque postecorum margine nigris. Long. ·23.

One specimen found in Texas by Dr. Kinnerly. Of the same size and form as E. tripustulatus.

BRACHIACANTHA Muls.

B. quadrillum, ovalis valde convexa, nigra nitida, dense punctulata, thorace macula magna laterali rotundata elytris, altera subreniformi subapicali flavo-rufis ornatis; antennis palpis pedibusque flavo-rufis, femoribus infuscatis. Long. ·2.

New Braunfels, Texas, Mr. Lindheimer. More regularly oval than B. dentipes; it differs from that species by the black head, and by the anterior spots of the elytra being wanting.

HYPERASPIS Redt.

H. cincta, rotundato-ovalis, nigra nitida, capite thoraceque subtiliter punctatis, illo flavo, hoc margine laterali apicalique tenui flavis, elytris minus dense punctatis, margine lato flavo-rufo pone humeros emarginato, postice ambiente, sed suturam haud attingente ad apicem obtuse rotundato, margine laterali pone medium anguste nigro. Long. ·10.

Santa Isabel, California, one specimen. A very pretty and distinct species: the yellow margin of the elytra occupies about one fourth of the surface; internally it is suddenly and deeply emarginate behind the humerous; it follows the contour of the sides almost to the suture, where it is obtusely rounded; the extreme margin from the middle to the tip is black.

April 6th.

Vice President LEA in the Chair.

Fifty-one members present.

Dr. Leidy called the attention of the members to some fossil remains on the table just received from Dr. Hayden. They are part of the Niobrara collection, and apparently indicate two additional species of the ancient Camel (*Procamelus*). One of the species is founded on the greater portion of one side of the lower jaw containing most of the molar teeth. Six molars form a closed row, of which the back four have about the same size and form as in the recent Camel. The second premolar is like the third one, and the first of the closed series has a laterally compressed conical crown with trenchant borders. The caniniform premolar has almost the same size, form and relative position as in the recent Camel; and in the fossil, in a corresponding position, there is an equally large socket, as in the latter, for a true canine. The jaw is shorter but deeper than in the Camel, and it appears to indicate that the species to which it belongs was about the size of the latter animal. The length of position occupied by the closed row of six molars is six and a quarter inches; the depth of the jaw below the middle of the last molar is two and a half inches, and below the first molar one and three-quarter inches. For this species the name of PROCAMELUS ROBUSTUS is proposed.

The second additional species of this genus is indicated by several small fragments of an upper jaw with molar teeth, of an animal about the size of the Lama. The three premolars of the closed row occupy a position of fifteen lines in extent. For the species the name of PROCAMELUS GRACILIS is proposed.

Dr. Leidy added that he took the present opportunity to point out the admirable quality of bees-wax as a means of mending fractured fossils, and of increasing their strength when friable. If a fossil bone or shell have become quite brittle by the loss of its animal matter, and is dipped in melted wax and allowed to cool, it becomes nearly as hard as the specimen was in its